



**PREVENTION AND TREATMENT  
OF TUBERCULOSIS IN THE  
ADMINISTRATIVE COUNTY OF LANCASTER.**

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**Report of the Central Tuberculosis Officer  
of the Lancashire County Council  
for the Year 1933.**

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# COUNTY TUBERCULOSIS COMMITTEE

(1934).

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The Chairman of the County Council :

†Sir James T. Travis-Clegg, J.P., D.L.

The Vice-Chairman of the County Council :

\*†W. Hodgson, Esq., J.P.

---

*Chairman of Committee :*

\*†C. J. Trimble, Esq., C.B., C.M.G., L.R.C.P., D.P.H., J.P., D.L.

*Vice-Chairman :*

\*†E. Boothman, Esq., J.P.

## COUNTY ALDERMEN—

J. C. Beckitt, Esq., M.R.C.S.,  
L.R.C.P., D.P.H.

A. S. Bury, Esq., J.P.  
\*Rev. A. M. Mitchell, M.A.

## COUNTY COUNCILLORS—

L. Allen, Esq., J.P.  
W. J. Bridge, Esq.  
H. Bright, Esq.  
\*E. Clegg, Esq.  
F. H. Dodd, Esq.  
W. T. Jackson, Esq., J.P.  
H. F. Jeffery, Esq., M.B., Ch.B.,  
J.P.

\*Rev. A. Kershaw, M.A.  
W. J. Lucas, Esq., J.P.,  
F.I.O.B.  
\*P. F. Mannix, Esq., M.D., M.Ch.,  
B.A.O., J.P.  
\*Sir T. S. Tomlinson, J.P.  
\*E. Tye, Esq.  
N. Worsley, Esq., J.P.

\* Members of the Sanatorium and Hospital Sub-Committee.

† County Aldermen.



# MEDICAL AND NURSING STAFF OF THE TUBERCULOSIS DEPARTMENT, Oct. 1934

G. Lissant Cox, M.A., M.D. (Camb.), M.R.C.S. (Eng.), L.R.C.P. (Lond.),  
Central Tuberculosis Officer.

## STAFF OF THE DISPENSARY AREAS AND COUNTY SANATORIA AND HOSPITALS.

### *Area No. 1. (Population 244,578).*

(Lancaster, Morecambe and Heysham, Garstang Rural (part), Preston Rural,  
Walton-le-Dale, Chorley, and Horwich districts).

Consultant Tuberculosis Officer and Visiting Physician, Lancaster  
Pulmonary Hospital—George H. Leigh, M.D., Ch.B., D.P.H.  
(Manch.)

Assistant Tuberculosis Officer—Frederick C. S. Bradbury, M.D.,  
B.Ch., B.A.O. (Belfast), B.Hy., D.P.H. (Durham).

### *Area No. 2. (Population 337,073).*

(Clitheroe, Colne, Nelson, Burnley Rural, Blackburn Rural, Accrington,  
Darwen, Haslingden, Rawtenstall, and Bacup districts).

Consultant Tuberculosis Officer and Visiting Medical Superintendent,  
Withnell Pulmonary Hospital—Burgess MacPhee, M.B., Ch.B.  
(Glas.), D.P.H. (Camb.).

Assistant Tuberculosis Officers—Scott C. Adam, M.B., Ch.B.  
(Glas.), D.P.H. (Lond.), and William Fettes, M.B., Ch.B.,  
D.P.H. (Aberdeen).

### *Area No. 3. (Population 365,790).*

(Ramsbottom, Littleborough, Radcliffe, Heywood, Crompton, Royton, Prestwich,  
Middleton, Chadderton, Failsworth, Ashton-under-Lyne, Mossley, and  
Denton districts).

Consultant Tuberculosis Officer and Visiting Medical Superintendent,  
Wolstenholme Pulmonary Hospital—George Fletcher, M.A., M.D.,  
(Glas.), M.R.C.P. (Lond.), D.P.H. (Camb.).

Assistant Tuberculosis Officers—Cecil Berry, L.R.C.P., L.R.C.S.  
(Edin.), L.R.F.P.S. (Glas.), D.P.H. (R.C.P.S.I.), and James L.  
Armour, M.B., Ch.B. (Liverpool), M.R.C.S. (Eng.), L.R.C.P.  
(Lond.).

### *Area No. 4. (Population 359,220).*

(Westhoughton, Atherton, Farnworth, Leigh, Swinton and Pendlebury,  
Eccles, and Stretford districts).

Consultant Tuberculosis Officer and Visiting Medical Superintendent,  
Peel Hall Pulmonary Hospital—George Jessel, M.A., M.D.  
(Oxon.), D.P.H. (Manch.).

Assistant Tuberculosis Officers—Alexander B. Jamieson, M.B.,  
Ch.B. (Edin.), and Henry J. Villiers, L.R.C.P.I., L.R.C.S.I.

### *Area No. 5. (Population 257,212).*

(West Lancashire Rural, Great Crosby, Waterloo-with-Seaforth, Newton-in-Maker-  
field, Whiston Rural, Warrington Rural, and Widnes districts).

Consultant Tuberculosis Officer and Visiting Medical Superintendent,  
Rufford Pulmonary Hospital—Charles W. Laird, B.A., M.D.  
(Dublin), D.P.H. (Liverpool).

Assistant Tuberculosis Officer—Charles H. Lilley, M.B., Ch.B.  
(St. Andrews), D.P.H. (Lond.).

*Furness Sub-Area.* (Population 38,355).

(Dalton-in-Furness, Grange-over-Sands, Ulverston, and Ulverston Rural districts).

Consultant Tuberculosis Officer and Medical Superintendent, High Carley Sanatorium—George Leggat, M.B., Ch.B., D.P.H. (Aberdeen).

*Fylde Sub-Area.* (Population 91,222).

(Fleetwood, Thornton Cleveleys, Lytham St. Annes, Fylde Rural, Garstang Rural (part), and Kirkham districts).

Consultant Tuberculosis Officer and Medical Superintendent, Elswick Sanatorium—G. Barker Charnock, L.R.C.P., L.R.C.S. (Edin.), L.R.F.P.S. (Glas.), D.P.H. (Liverpool).

*Wigan County Sub-Area.* (Population 109,280).

(Ashton-in-Makerfield, Hindley, Ince-in-Makerfield, and Wigan Rural districts).

Consultant Tuberculosis Officer and Medical Superintendent, Wrightington Hospital—E. H. Allon Pask, M.D. (Lond.), M.R.C.S. (Eng.), L.R.C.P. (Lond.).

Assistant Tuberculosis Officer—J. Edgar Wallace, M.D., Ch.B. (Liverpool), M.R.C.S. (Eng.), L.R.C.P. (Lond.).

*High Carley Sanatorium and Oubas House Children's Sanatorium.*

Medical Superintendent and Consultant Tuberculosis Officer, Furness Dispensary Sub-Area—George Leggat, M.B., Ch.B., D.P.H. (Aberdeen).

Assistant Medical Superintendent—Vacancy.

*Elswick Sanatorium.*

Medical Superintendent and Consultant Tuberculosis Officer, Fylde Dispensary Sub-Area—G. Barker Charnock, L.R.C.P., L.R.C.S. (Edin.), L.R.F.P.S. (Glas.), D.P.H. (Liverpool).

*Wrightington Hospital.*

Medical Superintendent and Consultant Tuberculosis Officer, Wigan County Dispensary Sub-Area—E. H. Allon Pask, M.D. (Lond.), M.R.C.S. (Eng.), L.R.C.P. (Lond.).

Assistant Medical Superintendent—E. H. W. Deane, M.B., B.S. (Melbourne).

Junior Assistant Medical Officer—Jonathan Dobson, M.R.C.S. (Eng.), L.R.C.P. (Lond.)

*Chadderton Pulmonary Hospital.*

Visiting Medical Superintendent and Medical Officer of Health for the Chadderton Urban District—James Wood, M.D., Ch.B., D.P.H., R.C.P.S.I.

*Heath Charnock Pulmonary Hospital.*

Visiting Medical Superintendent and Medical Officer to the Chorley Joint Hospital Board—John W. Rigby, M.R.C.S. (Eng.), L.R.C.P. (Lond.).



*Withnell, Wolstenholme, Peel Hall,  
and Rufford Pulmonary Hospitals.*

The Consultant Tuberculosis Officers of Dispensary Areas Nos. 2, 3, 4 and 5, respectively, are the Medical Superintendents of these Hospitals.

CONSULTING SURGICAL STAFF.

T. P. McMurray, M.Ch., F.R.C.S. (Edin.), and  
Harry Platt, M.D. (Manch.), M.S. (Lond.), F.R.C.S. (Eng.).

Visiting Consulting Orthopædic Surgeons, Wrightington Hospital.

H. H. Bywater, M.D. (Manch.), D.Ch.O. (Liverpool), F.R.C.S. (Edin.),

Visiting Consulting Ophthalmic Surgeon, Wrightington Hospital.

H. Morriston Davies, M.D., M.Ch. (Camb.), F.R.C.S. (Eng.).

Visiting Consulting Chest Surgeon, Elswick and High Carley  
Sanatoria, and Peel Hall Pulmonary Hospital.

VISITING DENTAL SURGEONS.

High Carley and Oubas House Sanatoria—A. Miller, L.D.S. (R.C.S., Eng.).

Elswick Sanatorium—Ronald D. Allison, L.R.C.P., L.R.C.S.

(Edin.), L.R.F.P.S. (Glas.), L.D.S. (R.C.S., Edin.).

Wrightington Hospital—John J. Ward, L.D.S. (R.C.S., Eng.).

MATRONS.

High Carley and Oubas House Sanatoria	...	...	E. Woosey.
Elswick Sanatorium	...	...	A. Jones.
Chadderton Pulmonary Hospital	...	...	I. Felstead.
Heath Charnock Pulmonary Hospital	...	...	H. Sinclair.
Peel Hall Pulmonary Hospital	...	...	E. Simmons.
Rufford Pulmonary Hospital	...	...	S. Holmes.
Withnell Pulmonary Hospital	...	...	D. Willman.
Wolstenholme Pulmonary Hospital	...	...	E. G. Glass.
Wrightington Hospital	...	...	E. Moseley.

TUBERCULOSIS HEALTH VISITORS.

Area No. 1.—L. Walker\*, J. Skelcher, F. D. Abbott\*, G. M. Hunter.

Area No. 2.—R. Lambert\*, A. Munro\*, M. Duggan\*, L. F. Norwood,  
E. Watterson, H. M. Alcock\*.

Area No. 3.—M. A. Potter, H. Dewsnap\*, I. F. Macdonald\*, C.  
Guilfoy\*, A. Flynn\*, W. Swift, M. Sherwen.

Area No. 4.—M. B. Jones, H. M. Shakespeare\*, F. G. Smith, A.  
Dickinson, I. M. Corfield, K. Blakemore, M. Gibson\*.

Area No. 5.—E. Walch, M. J. Wilson\*, A. Duncan, L. Farquhar\*,  
M. J. McKeown\*.

Furness Sub-Area.—E. A. Duston.

Fylde Sub-Area.—A. Tweedy\*.

Wigan County Sub-Area.—E. Walters\*, M. J. Evans.

\* Possesses a health visitor's or sanitary certificate.

# REPORT

## OF THE

# CENTRAL TUBERCULOSIS OFFICER

### FOR THE YEAR 1933.

---

*To the Chairman and Members of the  
Lancashire County Council.*

LADIES AND GENTLEMEN,

I have the honour to submit the twentieth annual report on the work of the tuberculosis department, and in this introductory portion will give briefly some of the principal features of the work in 1933.

#### *Tuberculosis incidence and mortality.*

Since 1923 there has been in the Administrative County a progressive decline in the death-rates from pulmonary tuberculosis interrupted by the years 1929 and 1933 ; in these years an epidemic of influenza caused a slight rise in the pulmonary deaths, and it is to this factor the chief medical officer of the Ministry of Health ascribes an increase in the rate for England and Wales for 1933.

The deaths from pulmonary tuberculosis in the Administrative County for 1934 will be fewer than in 1933, for an inspection of the weekly death returns to the end of September reveals a fall sufficient to justify this prediction.

The deaths from non-pulmonary tuberculosis (that is, tuberculosis of the bones, joints, and glands) are for 1933, again the lowest on record.

Taking pulmonary and non-pulmonary tuberculosis together, the County mortality in 1933 was 56 per cent. of the pre-war average rates for 1912-14, representing some 900 fewer deaths. This is the briefest way to indicate the progress made in combating the disease.

The number of new cases is declining slowly but steadily ; there were 975 fewer in 1933 than in 1923.

This progress is attributable to a number of factors, as stated by the chief medical officer of the Ministry of Health in his report for 1933 : “ Among them are the improved environment of the whole



population, sanitation, water supply, housing and reconditioning of houses, the rehousing or segregation of tuberculous persons, the immense reduction of 'spitting' in public places and even in public houses, the improvement of the milk supply and pasteurisation, industrial welfare and factory hygiene, the improved dietary of the people since 1851, the practice of the open air life, dress reform, the school medical service, and the ever widening scope of education. To these general factors must be added the public health services, the particular anti-tuberculosis measures adopted (notification, dispensary, sanatorium and hospital provision, etc.), and the advance of the practice of the science and art of Medicine."

The following statement shows the death-rate from tuberculosis (all forms) per 1,000 of the population in the Administrative County, counties with a population of one million or more, and England and Wales :—Lancashire, 0·68 ; Durham, 0·88 ; Essex, 0·63 ; Kent, 0·76 ; Middlesex, 0·69 ; Surrey, 0·63 ; West Riding of Yorkshire, 0·62 ; and England and Wales, 0·82.

#### *X-ray examinations and collapse therapy.*

X-ray plants were provided primarily as an aid to diagnosis, but they are also essential in controlling artificial pneumothorax treatment.

X-ray examinations at the County dispensaries were 787 in 1922, and 9,095 in 1933. In addition, some eight thousand examinations were made at sanatoria and hospitals.

Ten years ago artificial pneumothorax treatment was very sparingly given. Now, about 15 per cent. of all cases entering the sanatoria and hospitals commence it during institutional treatment ; many continue it at the dispensaries after they leave.

Artificial pneumothorax treatment is dealt with in the reports of the medical superintendents of County sanatoria and pulmonary hospitals. In addition, Dr. Bradbury, in an article forming Chapter VI, shows that the results of this form of treatment at the Rufford Hospital are better to the extent of 15 to 30 per cent. than carefully matched controls who did not have the treatment.

Phrenicectomy is performed at three institutions (High Carley, Elswick, and Peel Hall) and the rarer operation of thoracoplasty at one institution (High Carley).

#### *After-histories of tuberculous patients.*

This year I have introduced Chapters XII and XIV which give the after-histories of patients suffering from pulmonary and non-



pulmonary tuberculosis. The tables in the chapters named show the position at the end of 1933 of patients who commenced treatment in 1920, 1925, and 1930.

For *pulmonary* tuberculosis the patients first treated in 1930 show, after an average of  $3\frac{1}{2}$  years' supervision, a small but definite improvement over those commencing treatment in 1925 and 1920.

In regard to *non-pulmonary* tuberculosis, over three-fourths of the patients (and these include adults) are restored to health.

*Progress and future requirements in the tuberculosis scheme.*

Below is a statement of the principal improvements which have been carried out at dispensaries, sanatoria and pulmonary hospitals ; also included are three dispensaries where better accommodation is required.

*Preston Dispensary.* In consequence of the extension of the County Offices and the demolition of certain neighbouring property including 22, Bolton Street, Preston, it was necessary to obtain alternative accommodation for the dispensary. Suitable premises were acquired at 12, Walton's Parade, Preston, and the new dispensary was opened on the 20th September, 1934.

*Chorley Dispensary.* The premises, 59, Gillibrand Street, Chorley, were found to be inadequate with the extra demands occasioned by artificial light treatment. New premises were acquired at 34, St. Thomas's Road, Chorley, and will be ready for occupation in October, 1934. The existing premises are being transferred to the County Constabulary.

*Dispensary at Elswick Sanatorium.* The Fylde Sub-Area is normally served by the Fleetwood Dispensary. For the convenience of patients living in the neighbourhood of the Elswick Sanatorium, the medical superintendent has arranged for a dispensary session once per week at the institution.

*Widnes Dispensary.* The existing dispensary accommodation is insufficient for present requirements, and negotiations are in progress with the Widnes Corporation for them to include a wing to serve as a dispensary in their proposed new clinic and offices. Plans have been prepared and an estimate of the cost will shortly be obtained.

*Ashton-under-Lyne Dispensary.* The premises, Boston House, Warrington Street, Ashton-under-Lyne, are inadequate for present needs, and a scheme for building a new dispensary is being considered.

*Oldham Dispensary.* The existing premises, 25, Barker Street, Oldham, occupied jointly with the Oldham Corporation, are unsuitable for present requirements. The County Tuberculosis Committee have considered several proposals for new premises, and a scheme for erecting a suitable building in Chadderton is being prepared.

*Mossley Dispensary.* This dispensary served only a small area, and with the declining number of patients in the locality it was possible to close the premises on the 31st March, 1934 ; the remaining patients can now conveniently attend the Ashton-under-Lyne Dispensary.

*Lancaster Pulmonary Hospital.* The new Isolation Hospital of the Lancaster and District Joint Hospital Board, which includes a block for 36 tuberculous patients, was officially opened on the 28th September, 1934. The tuberculosis block replaces the accommodation previously available at the Luneside Hospital until the flooding in October, 1927. The block will be in the medical charge of the consultant tuberculosis officer of Dispensary Area No. 1.

*Springfield Pulmonary Hospital.* By an agreement with the Rochdale Corporation, 18 of 36 beds to be provided at Springfield House, Rochdale, by the

Corporation will be available for County adult female patients suffering from pulmonary tuberculosis. The hospital was officially opened on the 21st September, 1934, and patients will shortly be admitted. The accommodation will be valuable for the patients in the south-eastern portion of the County.

*Wolstenholme Pulmonary Hospital.* This hospital was transferred by the Rochdale Corporation to the County Council on the 1st July, 1933. The work of re-organisation was commenced on the 13th September, 1933, and the whole scheme is due to be completed in January, 1935. Meantime, the existing accommodation for 45 adult male patients is still being used partly for County and partly for Rochdale cases. On completion of the new work there will be 55 beds, 25 of which will be leased to the Corporation. The hospital is in the medical charge of the dispensary staff of Area No. 3.

*Aitken Sanatorium.* The Bury Joint Hospital Board have let the contract for improving the accommodation, facilities for treatment, and maintenance of patients at the Aitken Sanatorium, Holcombe Brook; the scheme of alterations will be completed in 1935. The County Council reserve 50 beds on lease until the 1st October, 1960. The new scheme involves an expenditure of about £19,000.

### *Death of Dr. Alan D. Brunwin.*

It is with great regret that I have to record the death on the 21st June, 1934, of Alan D. Brunwin, M.A., M.D., B.Ch. (Camb.), D.P.H. (Aberdeen), consultant tuberculosis officer for Dispensary Area No. 1, which includes dispensaries at Lancaster, Preston, and Chorley, and a pulmonary hospital at Lancaster. Dr. Brunwin was 55 years of age, and joined the medical staff of the County Council as a consultant tuberculosis officer in September, 1913. Dr. Brunwin served in the Great War from the 3rd November, 1914, until the 3rd February, 1919; he was an officer of the Order of St. John of Jerusalem. He did valuable pioneer work in regard to the treatment of tuberculosis by artificial light at centres established in tuberculosis dispensaries, and his clinical abilities ensured the complete confidence of his medical colleagues. His death is a distinct loss to the tuberculosis medical service of the Lancashire County Council.

Dr. Brunwin's chief assistant tuberculosis officer, George H. Leigh, M.D., Ch.B., D.P.H. (Manch.), was appointed to the vacancy by the County Council on the 2nd August, 1934.

### *Propaganda.*

The tuberculosis officers from time to time give lectures on tuberculosis as part of the endeavour to educate the public to prevent the spread of the disease. In February, 1934, this propaganda was assisted by Dr. Harley Williams, the lecturer of the National Association for the Prevention of Tuberculosis, who addressed 16 meetings in eight towns and villages in North Lancashire. The addresses were given to older scholars in the afternoon, and to adults in the evening. The lectures were illustrated by cinematograph films, and were well attended. We hope to secure the able services of Dr. Harley Williams on future occasions.



*Special articles by medical staff.*

The following special articles by members of the medical staff are printed in this report :—

Actinotherapy at a Tuberculosis Dispensary, by Dr. G. Jessel (pages 17 to 23).

Artificial Pneumothorax. A survey of 64 cases with controls induced at Rufford Pulmonary Hospital, by Dr. F. C. S. Bradbury (pages 24 to 33).

Inhalation Therapy in Pulmonary Tuberculosis by the Apneu Collison Inhaler, by Dr. G. Barker Charnock (pages 34 to 38).

Hydnocarpates in the Treatment of Lupus Vulgaris, by Dr. J. Edgar Wallace (pages 39 to 41).

Gold Therapy, by Dr. G. Leggat (pages 118 to 120).

Artificial Sunlight in the Treatment of Pulmonary Tuberculosis, by Dr. G. Leggat (pages 116 to 118).

In addition, the following articles have been contributed by members of the staff named, but owing to lack of space they cannot be printed in this report ; they will, however, probably appear in appropriate medical journals :—

Late Respiratory Effects of Measles and Whooping Cough, by Dr. G. Jessel.

Modern Developments in Dispensary Practice, by Dr. G. Jessel.

Blood Sedimentation at a Tuberculosis Dispensary, by Drs. G. Jessel, A. B. Jamieson, and H. J. Villiers.

Tuberculosis in Relation to Blood Groups, by Dr. F. C. S. Bradbury.

*Extent and cost of County scheme.*

The tuberculosis scheme covers the whole of the Administrative County, population 1,802,730 and acreage 1,038,490. The average number of beds in use is 914. There are 24 tuberculosis dispensaries owned or rented, and a total of 7,556 definite cases on the dispensary registers. The gross expenditure on tuberculosis services for 1934–35 is estimated at £195,708 less £5,020, income from various sources. Towards the expenditure there is now an amount included in the General Exchequer Grant receivable under the Local Government Act, 1929 ; it is not specifically allocated to the tuberculosis service but is a general credit to the County Fund. Previous to the passing of the Act the Government made an annual grant based upon 50 per cent. of the net approved expenditure ; for 1928–29 their grant amounted to £74,105.

*Co-operation with medical practitioners, sanitary authorities, and health officials.*

The results of the tuberculosis scheme would be very different if the relations with the medical practitioners in the County, together with the sanitary authorities and their medical officers and sanitary inspectors, had not been of the most cordial and satisfactory character.

I take this opportunity of acknowledging such co-operation from these sources. It is very satisfactory that 89 per cent. of new cases were sent *before notification* to the tuberculosis officers for an opinion as to diagnosis.

*Visits of medical officers.*

I beg to report that among the visitors to Lancashire to study or to investigate particular phases of the County tuberculosis scheme were the following :—

- Dr. T. N. V. Potts, medical officer of health of the West Riding of Yorkshire, and Dr. G. S. Johnston, chief tuberculosis officer. Visited on the 1st December, 1933, Accrington Dispensary and Withnell Pulmonary Hospital.
- Dr. Norman F. Smith, a medical officer of the Ministry of Health. Visited in February, 1934, Central Office ; Eccles and Ulverston Dispensaries ; Elswick, High Carley, and Oubas House Sanatoria ; and Rufford and Peel Hall Pulmonary Hospitals.
- Dr. J. Alison Glover, senior medical officer of the Board of Education, Dr. J. Pearse, C.B.E., a medical officer of the Ministry of Health, and Mr. A. P. Hughes Gibbs, O.B.E., a chief inspector of the Ministry of Health. Visited in May, 1934, Central Office ; Accrington and Wigan Dispensaries ; and Withnell and Wrightington Hospitals. (Visit in connection with a Government investigation into the effects of continued unemployment on health in certain distressed areas in the country.)
- A sub-committee of the Middlesbrough Corporation and Dr. F. J. Henry, tuberculosis officer for Middlesbrough. Visited on the 21st July, 1934, Withnell Pulmonary Hospital.
- Dr. Harold G. Anderson, China. Visited on the 17th August, 1934, the Central Office.
- Dr. E. Donaldson, a medical officer of the Ministry of Health. Visited on the 2nd August, 1934, the Central Office, and on the 25th to the 28th September the Accrington, Wigan, and Ashton-under-Lyne Dispensaries, and the Withnell, Wrightington, and Wolstenholme Hospitals.

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I have again to thank my medical colleagues and the nursing and clerical staffs for continued help. I have had very valuable help from my principal clerk, Mr. H. F. Hughes, especially in preparing this report, and have, in addition, to thank the Public Health Department for furnishing certain statistics on notifications and deaths.

I am,

Your obedient Servant,

G. LISSANT COX,

Central Tuberculosis Officer.

*County Offices, Preston.*

*11th October, 1934.*



## I.—TUBERCULOSIS INCIDENCE AND MORTALITY IN 1933.

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The principal features of tuberculosis incidence and mortality in 1933 in the Administrative County, which contains an estimated population of 1,802,730, are as follow :—

1. The death-rate (0·55 per 1,000 of the population) from pulmonary tuberculosis in the County is slightly above that for 1932, but is, with the exception of that year, the lowest on record, and continues below the pulmonary rate (0·69) for England and Wales.

2. A similar small rise occurred in England and Wales. But for the influenza epidemic in the first quarter of 1933 there would have been a decline in pulmonary deaths.

3. There was a small reduction in the number of new pulmonary cases in 1933 compared with 1932. Each year since 1924 has shown a reduction, varying from 6 to 137, in the number of new cases. Comparing 1924 and 1933, the total reduction in the new pulmonary cases is 538.

4. The death-rate (0·12 per 1,000 of the population) from non-pulmonary tuberculosis is the lowest on record. It is now much less than one-half of the rates recorded in 1913 and 1914. The rate for England and Wales is 0·13.

5. The number of new cases of non-pulmonary tuberculosis—811—reported during the year is again the lowest on record.

6. The saving in human life by the reduction in the County death-rate from all forms of tuberculosis is considerable; for example, if the death-rate for 1933 had been the same as in 1914 there would have been 2,151 deaths instead of the actual number of 1,242—a difference of 909.

7. Pulmonary tuberculosis is again more prevalent among males than females in regard to both cases and deaths. Allowing for the difference in the population of the sexes, for every 100 deaths of females in 1933 there were 145 deaths of males. For England and Wales the ratio for 1933 was 100 female deaths to 143 male deaths. Similarly, based on new cases, in 1933 for every 100 female notifications in the County there were 140 male notifications.

8. For females, the age-group 15–25 years has the largest number of deaths from pulmonary tuberculosis (see Table 3, page 4). This is the age-group which has shown the least response to treatment. The Chief Medical Officer of the Ministry of Health in his report for 1933 mentions that in some areas the rate among young adult females had actually increased during 1925–30, but as far as England and Wales as a whole is concerned the rate is now slightly lower than it was in pre-war days. In the Administrative County, however, the



death-rate of females in age-group 15–25 is well below the death-rates of the immediate pre-war years 1912–14.

9. With regard to non-pulmonary tuberculosis, the most striking decline has occurred in the age-group 0–5 years ; in 1914 the deaths in this group totalled 286, whereas in 1933 there were only 67.

### NEW CASES OF TUBERCULOSIS.

The following Table 1 shows since 1918 the total number of new cases of pulmonary and non-pulmonary tuberculosis reported in each year ; the case-rate for pulmonary tuberculosis is also given :—

Year	Pulmonary tuberculosis				Non-pulmonary tuberculosis		
	Cases notified ( <i>i.e.</i> , during life)	Cases reported at time of death only	Total known cases	Case-rate per 1,000 of population	Cases notified ( <i>i.e.</i> , during life)	Cases reported at time of death only	Total known cases
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1918	2,534	303	2,837	1·64	885	137	1,022
1919	2,105	221	2,326	1·34	847	104	951
1920	2,084	177	2,261	1·30	968	122	1,090
1921	2,044	135	2,179	1·23	899	96	995
1922	1,863	105	1,968	1·11	956	83	1,039
1923	1,937	85	2,022	1·13	1,188	74	1,262
1924	1,972	64	2,036	1·14	1,120	65	1,185
1925	1,846	67	1,913	1·07	1,027	57	1,084
1926	1,828	58	1,886	1·05	953	32	985
1927	1,794	54	1,848	1·02	1,045	42	1,087
1928	1,660	56	1,716	0·94	956	51	1,007
1929	1,517	62	1,579	0·87	913	61	974
1930	1,527	46	1,573	0·87	982	61	1,043
1931	1,460	61	1,521	0·84	862	51	913
1932	1,477	37	1,514	0·83	825	28	853
1933	1,453	45	1,498	0·82	780	31	811

The decline—continuous since 1924—in the new cases of pulmonary tuberculosis is seen in column (4) of the above table. The improvement has taken place mainly among the males in age-group 5–15 and females 5–15 and 35–45.

With regard to non-pulmonary tuberculosis, notification was undoubtedly influenced by the developments in the County scheme between 1922 and 1927, such as the establishment of light centres at the dispensaries. Furthermore, in the earlier years it is known that notification of non-pulmonary cases was not uniformly carried out by the practitioners as in those years the treatment provided under the County scheme was not so extensive as at the present time.

The notifications referred to in columns (2) and (6) are dealt with further in Appendix II, where folding Tables B, C, and D are inserted.

## DEATHS AND DEATH-RATES FROM TUBERCULOSIS.

Table 2 below shows the number of deaths registered and the death-rates recorded during the years 1913 to 1933 in the Administrative County :—

Year	Population.	Deaths.			Death-rate per 1,000 of population.		
		Pulmonary tuberculosis	Non- pulmonary tuberculosis	Total.	Pulmonary tuberculosis	Non- pulmonary tuberculosis	Tuberculosis (all forms)
1913	1,749,659	1,441	527	1,968	0.82	0.30	1.12
1914	1,748,289	1,523	572	2,095	0.87	0.32	1.19
1915	1,666,488	1,614	555	2,169	0.96	0.34	1.30
1916	1,620,062	1,685	471	2,156	1.04	0.29	1.33
1917	1,568,656	1,584	466	2,050	1.00	0.30	1.30
1918	1,537,951	1,652	435	2,087	1.07	0.28	1.35
1919	1,662,716	1,339	358	1,697	0.80	0.22	1.02
1920	1,728,967	1,323	396	1,719	0.76	0.23	0.99
1921	1,758,738	1,301	376	1,677	0.73	0.21	0.95
1922	1,766,027	1,362	389	1,751	0.77	0.22	0.99
1923	1,772,658	1,250	412	1,662	0.70	0.23	0.93
1924	1,782,800	1,215	339	1,554	0.68	0.19	0.87
1925	1,785,500	1,205	361	1,566	0.67	0.20	0.87
1926	1,788,500	1,158	286	1,444	0.64	0.16	0.80
1927	1,800,300	1,105	296	1,401	0.61	0.16	0.77
1928	1,811,000	1,066	287	1,353	0.58	0.15	0.74
1929	1,811,700	1,102	279	1,381	0.60	0.15	0.76
1930	1,806,960	1,046	253	1,299	0.57	0.14	0.71
1931	1,804,400	1,021	266	1,287	0.56	0.14	0.71
1932	1,802,700	975	238	1,213	0.54	0.13	0.67
1933	1,802,730*	1,010	232	1,242	0.55	0.12	0.68

\* Consequent on the alteration of boundaries, the death-rates have been calculated on an adjusted population of 1,807,800.

In Appendix I are given the tuberculosis deaths and death-rates in the urban and rural sanitary districts in the Administrative County, and in the dispensary areas.



## ANALYSIS OF DEATHS FROM PULMONARY TUBERCULOSIS.

The following Table 3 shows the deaths recorded from pulmonary tuberculosis in 1933 and the preceding 12 years analysed according to sex and age :—

Period	Estimated sex population	Pulmonary deaths in various age-groups									Death-rate per 1,000 of sex population
		0 to 5	5 to 15	15 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over	Total	
<i>Males.</i>											
1921–25 (average)	841,030	9	15	120	131	151	153	83	26	688	0·81
1926–30 (average)	856,920	4	9	107	111	133	130	79	27	600	0·70
1931	858,023	6	11	99	126	120	142	80	29	613	0·71
1932	856,733	4	6	95	111	99	119	90	16	540	0·63
1933	859,156	1	8	90	108	119	125	92	30	573	0·66
<i>Females.</i>											
1921–25 (average)	929,614	8	26	172	145	104	69	37	17	578	0·62
1926–30 (average)	946,771	4	18	155	133	81	49	37	18	495	0·52
1931	946,377	2	10	129	95	75	49	31	17	408	0·43
1932	945,967	1	18	121	113	98	34	35	15	435	0·45
1933	948,644	—	16	126	125	69	49	29	23	437	0·46

It will be seen that the male pulmonary deaths in 1933 account almost wholly for the increase on the previous year, but otherwise they are well below the averages since 1921. The total deaths of females are two more than in 1932.

## DEATHS FROM NON-PULMONARY TUBERCULOSIS.

The mortality from non-pulmonary tuberculosis is still greatest among young children (ages 0 to 5) and young adults (ages 15 to 25). Relatively few deaths occur among persons over 35. The mortality rate is heavier among males (0·13) than females (0·11). The actual numbers of children dying each year from this form of the disease have greatly diminished. This decline is due to segregation and supervision of the adult pulmonary cases, social measures, the safeguarding of the milk supply, and the successful modern methods of treatment of children with non-pulmonary disease.

The classification of the deaths in 1933 from non-pulmonary tuberculosis, according to part affected, is as follows :—Vertebral column, 20 ; other bones and joints, 7 ; intestines and peritoneum, 65 ; central nervous system, 80 ; disseminated, 43 ; genito-urinary, 10 ; lymphatic system (abdominal and bronchial glands excepted), 4 ; other organs, 3 ; total, 232 (adults, males 59, females 68 ; children, males 60, females 45).

## TUBERCULOSIS DEATHS IN 1933 COMPARED WITH 1912-14.

The Registrar-General in his Statistical Review for 1931 (Text) gave for England and Wales an interesting table showing the mortality from tuberculosis (all forms) in 1931 per cent. of that in 1912-14. The features of that table have been incorporated in the following Table 4 which I have had constructed to compare the Lancashire Administrative County figures with England and Wales :—

Age-group.	Mortality from tuberculosis (all forms) in 1933 per cent. of that in 1912-14.		
	Males	Females	Total Persons.
0-5 .. .. .	% 34	% 26	% 31
5-15 .. .. .	36	39	38
15-25 .. .. .	68	69	68
25-45 .. .. .	60	65	62
45-65 .. .. .	55	41	50
65 and over .. .. .	66	69	67
All ages—Lancashire .. .. .	58	53	56
All ages—England and Wales .. .. .	61	59	60

Table 4 shows the enormous reduction in the mortality from tuberculosis (all forms) of children 0 to 5 and 5 to 15 years of age compared with the pre-war years represented by the average for 1912-14. Next, the greatest improvement has occurred in age-group 45 to 65 years, particularly among the females.

Summing up, the tuberculosis death-rate at all ages in 1933 in the Administrative County was 56 per cent. of the average rate of 1912-14, representing some 900 fewer deaths.



## II.—THE TUBERCULOSIS DISPENSARY : ITS PLACE AND USES.\*

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The subject allotted to me this afternoon is "The Tuberculosis Dispensary : its place and uses." If we survey in broad outline the modern evolution of the prevention and treatment of tuberculosis, three events stand out. They are : the conception of the sanatorium principle ; the finding of the tubercle bacillus ; and the creation of the tuberculosis dispensary. Now the creation of the first tuberculosis dispensary was, as everyone knows, due to the chairman of this meeting, Sir Robert Philip. His ideas and the later developments and applications have been of great importance in our dealing with the disease.

The tuberculosis dispensary has given us a new viewpoint and a new base from which we proceed to attack the enemy. We associate the tuberculosis dispensary more with prevention than with treatment, and the sanatorium more with treatment than with prevention, and this is why the sanatorium gets perhaps an undue proportion of the limelight compared with the dispensary.

What do we understand by the words "tuberculosis dispensary," or, as some call it, "tuberculosis clinic" ? The words "tuberculosis dispensary" have now come to indicate and include the half of a county council or county borough tuberculosis scheme for the prevention and treatment of tuberculosis. A better term is the dispensary unit, for this gives a clearer indication that a tuberculosis dispensary is essentially not a building but an organisation made up of many factors, of which the human is not the least important. A dispensary unit should be big enough to consist of the tuberculosis officer, his assistant or assistants, his nurses or health visitors, his chief and branch dispensaries, tuberculosis beds in an institution or small hospital for which the tuberculosis officer is the visiting physician. And we may usefully contrast the dispensary unit with the other half of a tuberculosis scheme, namely, the institutional unit.

I propose to deal with the dispensary unit under four headings :

- (1) The relation of the dispensary unit to the institutional unit.
- (2) The size of a dispensary unit.
- (3) The equipment for a unit.
- (4) The medical and nursing staff required for a dispensary unit.

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\*Opening paper read by Dr. G. Lissant Cox at the Annual Conference of the National Association for the Prevention of Tuberculosis, in London, on the 14th June, 1934.



# (1) THE RELATION OF THE DISPENSARY UNIT TO THE INSTITUTIONAL UNIT.

In any efficient tuberculosis scheme there are two sides which make up the whole—the institutional unit and the dispensary unit. The most important use of the dispensary unit is that it work in unity with the sanatorium or institutional unit. It is a lack of unity which is the real reason of so much ineffective work now being done in many parts of England and Scotland, but not in Wales, which has a model scheme. We do not need to go any farther than London for an example of *disunity*. Here—owing to the different powers possessed by the metropolitan boroughs and the London County Council, compared with the rest of England—we have the striking fact that the dispensary unit is under one authority—the metropolitan borough council—and the institutional unit under an entirely different authority—the London County Council. One or other of these authorities should control the whole.

Tuberculosis hospitals and sanatoriums have grown up in several ways and, as everyone knows, the tuberculosis institution preceded historically the tuberculosis dispensary. When tuberculosis schemes were being evolved by local authorities, in and after the stimulus due to the National Insurance Act of 1911, no attempt was made to correlate or properly to unite the tuberculosis dispensary with the tuberculosis institution. Both have been too much built up as *isolated units* in spite of the Astor Report, which stated that “. . . the tuberculosis officer connected with the dispensary . . . should have some beds at his disposal for the purpose of observation . . .” The tuberculosis officer of a dispensary acts as a consultant to the general practitioner in regard to cases or suspected cases of pulmonary and non-pulmonary tuberculosis. If he is not a consultant for the general practitioner he is a sham. It is therefore just as absurd for a tuberculosis officer to have no beds at a sanatorium or hospital as for a Harley Street physician to have no beds. What should be done?

My answer is this. Administrative changes in many present schemes require to be made so that the tuberculosis officer shall be at one and the same time a medical superintendent—visiting or resident—and the medical superintendent shall be, in part, a tuberculosis dispensary officer. If this is done, the problem, the complex problem which we meet with each patient, is seen whole. Further, more and more patients will come under *one* official doctor or, what is better, a team. As dispensary officer he will see the patient in consultation with the family doctor, at the home or dispensary—this is of the greatest importance—and as medical superintendent or visiting physician he will treat some, at any rate, of his patients in his institution. Surely

this method provides for a wider and more interesting outlook than the present common method of small independent inefficient units. Fortunately here and there throughout the country this combination of the two sides of tuberculosis work has taken, and is taking, root.

## (2) THE SIZE OF A DISPENSARY UNIT.

When the dispensary units were created in 1912 they were called dispensary areas and each had a separate tuberculosis officer in charge. They were nearly everywhere made too small. These small areas have been the reason for the appointment of so many part-time tuberculosis officers. If a whole-time tuberculosis officer or tuberculosis physician gives on the average greater efficiency than a medical officer taking on other kinds of public health work, then it follows that the basic administrative unit, both to pay for such an officer and to give him other reasonable conditions of service, must be in size larger than the small units that have been mentioned. To quote Sir George Newman in his 1929 report: "The small dispensary area may thus be responsible, in part, for an unnecessarily low and ineffective standard of work."

A local government administrative area, for example, a county with a population of a million, will include several large dispensary units, and make team work possible. In addition to a graded staff in each unit, the large authority provides for other important advantages which should not be ignored by the smaller authorities. Only large authorities can, for example, afford (a) well-equipped dispensaries with x-ray apparatus and adequate clerical staff, and (b) institutional accommodation suitable for all types of cases, *e.g.*, sanatoriums with educational facilities for children; sanatoriums and hospitals for early, intermediate, advanced, and observation adult cases; special hospitals and convalescent homes for adults and children suffering from non-pulmonary tuberculosis.

I submit that the size of a dispensary unit, measured by the population it serves, should be about 200,000 in a rural and 300,000 in an urban district. The very small local authorities of fifty to one hundred thousand population should combine for dispensary and institutional work.

## (3) THE EQUIPMENT FOR A UNIT.

It is now essential to have in every dispensary unit an x-ray plant available, and the best results emerge when the tuberculosis officer interprets his own skiagrams. Many parts of England and Scotland—but not Wales—are very inadequately equipped with facilities for the use of x-rays. So poorly served are many parts of the



country that I always hope that the Ministry of Health will, with immense courage, publish a black list. The scope of the tuberculosis dispensary includes the diagnosis not only of suspected cases of non-pulmonary and pulmonary tuberculosis, but also of non-tuberculous conditions of the lungs when such cases are referred to the tuberculosis officer by the family doctors for diagnosis and report. It is not a matter of routine inspection; we stand or fall on the skilful application of special expert methods of diagnosis and treatment. The great importance of x-ray work is a significant reason for having the dispensary areas or units large, because it is very uneconomical to put apparatus costing about £600 in a large number of small dispensary areas. A dispensary also requires a room for artificial pneumothorax refills.

The chief dispensary of a unit must be a bigger building than we envisaged before the use of x-rays and collapse therapy. Many areas are suffering from too small buildings.

#### (4) THE MEDICAL AND NURSING STAFF REQUIRED FOR A DISPENSARY UNIT.

A very important problem arises here. Should the units be in the hands of one man or a team? Should they be one-man units, or so arranged as to have a graded staff, *i.e.*, a senior with one or more assistants or deputies? I believe a dispensary unit, which it will be remembered includes a hospital of say 50 beds, should be of sufficient size to require a graded staff. Nothing is so hopeless at present in the tuberculosis service as the absence of sufficient graded staffs to provide a reasonable number of higher posts in the service.

Surely it is better to have fewer and better paid tuberculosis officers with larger areas than a large number of poorly paid practitioners of limited experience. In England, rural areas of 200,000 population and urban areas of 300,000, can be managed by a team of one whole-time tuberculosis officer with one or two medical assistants, four to six nurses or health visitors, and one or two clerks to relieve the tuberculosis officer of record keeping, preparation of reports, accountancy and routine correspondence. Such areas also provide sufficient remuneration for a tuberculosis physician who will be a real and not a sham consultant for the family doctor. A further point is that the medical staff of a dispensary unit should, and they do in all efficient schemes, work in the closest co-operation with the school medical service, other public health officers and voluntary hospitals.

#### SUMMARY.

To sum up the whole matter. The most important use of a tuberculosis dispensary or, as it is better called, a dispensary unit,



is that it work in unity with the institutional unit. This is best done when a graded medical staff or team control the united work. Much anti-tuberculosis work is ineffective because many tuberculosis officers and medical superintendents of institutions work in small isolated and independent units. The disunity of the two sides of tuberculosis work, the institutional and the dispensary, is illustrated by the administrative arrangements for London, where two separate authorities control the two sides. One or other should control the whole.

The most complete unity is achieved when the tuberculosis or dispensary officer and his assistants are in charge of a small institution—say, 50 beds—situated in the area of the dispensary unit. These units should be, as measured by population, about 200,000 in rural and 300,000 in urban areas.

Conversely, where there are larger institutions of 100 to 200 beds the hospital staff should serve a small dispensary area around the institution.

To be efficient and effective, each chief dispensary of the large units must now be equipped with x-ray plant—for diagnosis of patients sent by the family doctors, and for use in collapse therapy.

When we have done all this, we shall surely step on to further conquest of this disease.

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### III.—DO RECOVERED TUBERCULOUS CASES RELAPSE ?

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Since 1926, the Ministry of Health have allowed cases of pulmonary tuberculosis to be written off the dispensary register as recovered provided the disease has been quiescent for two years and arrested for a further three years. During 1933, 415 pulmonary cases were written off the County register as recovered ; of these, 122 were classified as T.B. plus cases.

In regard to non-pulmonary tuberculosis, cases may be written off the register as recovered if arrest of the disease has been maintained for at least three years. During 1933, 510 non-pulmonary cases were so written off.

When a patient's name is removed from the register as recovered, he or she is warned by the tuberculosis officer to seek medical aid if there should be any sign of recurrence of tuberculosis, either pulmonary or non-pulmonary. There is no doubt that this advice has been followed, for the average patient, having been treated for several years and supervised for the minimum of three or five years' quiescence, is not the type who, if relapsing, will fail to return to the dispensary through the aid of which his or her restoration to health has been mainly effected. If the contrary is asserted, then the best proof that such relapsing patients do not deliberately keep out of the tuberculosis scheme is indicated by the fact that the death returns do not contain the names of any patients dying from tuberculosis who have been written off as recovered and failed to return. From 1926 to the end of 1932, 5,694 patients were written off and, as may be expected, some of these suffered a relapse and others, in the ordinary hazard of life, were re-infected. Careful record has been kept of the patients so returning to the register, and Table 5 overleaf shows in respect of each calendar year the number written off and the numbers with percentages of such patients whose names were restored to the register.

Experience shows that patients are full of appreciation when, after many years' quiescence, their names are removed from the register as having recovered from tuberculosis. Furthermore, not only do the patients benefit, but large sums of public money are saved by the dispensary staff not having to supervise and examine periodically these several thousand patients throughout the remainder of their lives. The magnitude of this is shown by the fact that if no cases had been written off the register, the total patients under supervision at the end of 1933, instead of being 7,556, would have been in the region of 12,000.

Table 5. Patients written off the dispensary register during 1926-32 as recovered from tuberculosis, with numbers and percentages of patients whose names were restored to the register, on recurrence of disease, up to the end of 1933.

Cases written off as recovered.			Total cases restored to dispensary register up to end of 1933.				Percentage of recovered cases returning as tuberculous.
Year.	Classification.	Number.	T.B. plus.	T. B. minus	Non-pulmonary.	Total.	
1926	T.B. plus ...	39	1	—	—	1	2·5
	T.B. minus ...	484	5	5	2	12	2·4
	Non-pulmonary	423	3	3	17	23	5·4
	TOTAL ...	946	9	8	19	36	3·8
1927	T.B. plus ...	59	1	—	1	2	3·3
	T.B. minus ...	326	5	5	1	11	3·3
	Non-pulmonary	431	7	1	21	29	6·7
	TOTAL ...	816	13	6	23	42	5·1
1928	T.B. plus ...	60	2	—	—	2	3·3
	T.B. minus ...	289	1	6	2	9	3·1
	Non-pulmonary	502	—	3	27	30	5·9
	TOTAL ...	851	3	9	29	41	4·8
1929	T.B. plus ...	35	1	—	—	1	2·8
	T.B. minus ...	228	4	4	4	12	5·2
	Non-pulmonary	368	1	—	9	10	2·7
	TOTAL ...	631	6	4	13	23	3·6
1930	T.B. plus ...	59	1	—	1	2	3·3
	T.B. minus ...	267	1	4	—	5	1·8
	Non-pulmonary	550	2	4	16	22	4·0
	TOTAL ...	876	4	8	17	29	3·3
1931	T.B. plus ...	77	1	—	—	1	1·2
	T.B. minus ...	243	2	—	3	5	2·0
	Non-pulmonary	578	—	—	9	9	1·5
	TOTAL ...	898	3	—	12	15	1·6
1932	T.B. plus ...	70	4	—	—	4	5·7
	T.B. minus ...	210	1	1	—	2	0·9
	Non-pulmonary	396	—	—	3	3	0·7
	TOTAL ...	676	5	1	3	9	1·3
1926-1932	SUMMARY :						
	T.B. plus ...	399	11	—	2	13	3·2
	T.B. minus ...	2,047	19	25	12	56	2·7
	Non-pulmonary	3,248	13	11	102	126	3·8
TOTAL ...		5,694	43	36	116	195	3·4

Patients written off as recovered and whose names were restored to the register on account of the recurrence of tuberculous disease in the same calendar year are, in accordance with the Ministry of Health's Memorandum 37/T (Revised), regarded as continued cases, and the erasure of their names from the register cancelled. The number of such cases is exceedingly small—an examination of the figures for one year showed that only 0·10 per cent. relapsed in the same calendar year.

The foregoing table shows that 96·6 per cent. of the patients written off as recovered did not return to the dispensary. For T.B.



plus cases, that is, patients who at some time had a positive sputum, the percentage not returning was 96·8. In my opinion, these figures fully justify the policy of ceasing to supervise patients who have, as far as it is humanly possible to tell after long observation, made a complete recovery from the disease. Such persons can take their place among the normal population and enjoy life in their particular sphere. The fact that they do so must be, and is, an encouragement to new cases to seek treatment and to follow the advice given to them by the expert staff appointed by the County Council.

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#### IV.—DO CHILDREN REJECTED AS NON-TUBERCULOUS DEVELOP TUBERCULOSIS IN ADOLESCENCE ?

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The establishment, with certainty, of a diagnosis of pulmonary tuberculosis among children under the age of 15 years presents much difficulty. Thus, a great deal must be left to the experience and shrewdness of the tuberculosis officer concerned.

The fate of children suffering from pulmonary tuberculosis is quite well known. Generally speaking, if the disease is of the adult type they die from it, and if of the infantile type with treatment they mostly recover.

What of the children who are referred as suspects for examination at a tuberculosis dispensary, and are not accepted as suffering from pulmonary tuberculosis ? The answer depends, to a large extent, upon the accuracy of this negative diagnosis. Conversely, the exactness of one's standard of diagnosis may be tested by tracing the after-histories of these children.

The matter is of more than academic importance, for upon the strictness of the standard of diagnosis will depend the institutional accommodation required for treatment. In Lancashire one sanatorium bed (for pulmonary tuberculosis) is provided for every 7,560 of the child population (aged 0–15). The corresponding figure for the county authorities of England and Wales is 4,345.

Can it be shown that the relatively low institutional provision in Lancashire is sound policy, and not merely the reflection of an unnecessarily stringent diagnostic ideal ?

At this stage we should bear in mind certain figures showing the magnitude of the problem. The child population (0–15) of the Administrative County of Lancaster at the present time is 393,158.

The number of new children (excluding contacts) examined by the tuberculosis officers between 1914 and 1933 approximates 22,000 ; of these some 40 per cent. were diagnosed as suffering from tuberculosis and the remainder, 60 per cent., were rejected as non-tuberculous. For contacts the corresponding figures were : Approximately 10,000 examined, of which 7 per cent. were diagnosed as tuberculous and 93 per cent. rejected as non-tuberculous.

To trace the matter in a direct fashion would necessitate the following-up of all the "rejected" child examinees—numbering about 22,500—but as their rejection as non-tuberculous automatically removed them from the purview of the dispensary organisation, it is not practicable to make this direct test. Fortunately, valuable information can be obtained indirectly in the following way. The consecutive case sheets of 3,556 young adults (age-group 15–25)

diagnosed by the tuberculosis officers as suffering from tuberculosis (all forms) during the years 1927–33 inclusive have been listed. It is to be expected that a child who is in fact suffering from pulmonary tuberculosis of the infantile type and wrongly rejected as non-tuberculous will manifest definite tuberculosis in adolescence. On this supposition a special enquiry has been made by the dispensary staff to ascertain whether at any time during childhood any of these young adults had been examined by a tuberculosis officer in Lancashire or other area and been rejected as non-tuberculous. The non-pulmonary cases were included in the investigation as it is possible they may have been referred in childhood to the dispensary for a chest examination.

The results of the investigation are contained in the following table :—

TABLE 6.—*Young adults coming on dispensary registers as definite cases of tuberculosis during the seven years 1927–1933.*

Classification.	Age at which tuberculosis diagnosed. (two-year groups).							Remarks.
	Sex	15–16 years.	17–18 years.	19–20 years.	21–22 years.	23–24 years.	Total M & F	
(a) Pulmonary tuberculosis (minus)	M. F.	49 70	97 102	89 98	77 97	76 85	388 452	} 840
<i>Number seen by T.O. in childhood and diagnosed as non-tuberculous</i>	M. F.	— 4	— —	— —	— 2	1 1	1 7	
(b) Pulmonary tuberculosis (positive)	M. F.	49 120	134 184	154 205	181 205	145 218	663 932	} 1,595 ; total pul. 2,435.
<i>Number seen by T.O. in childhood and diagnosed as non-tuberculous</i>	M. F.	1 4	— 1	3 2	— —	— —	4 7	
(c) Non-pulmonary tuberculosis	M. F.	114 134	116 128	100 140	100 107	70 112	500 621	} Total non- pul. 1,121.
<i>Number seen by T.O. in childhood and diagnosed as non-tuberculous</i>	M. F.	4 4	1 —	— —	1 1	— —	6 5	
TOTAL ...	{	536 17	761 2	786 5	767 4	706 2	3,556 30	

It is found that of 3,556 young adults who came on the dispensary registers as definite cases of  tuberculosis in the period



1927-33 (and who could therefore have been seen as children in or after 1913), only 30 had been rejected in childhood as not suffering from pulmonary tuberculosis. This does not mean, of course, that these 30 adolescents were necessarily suffering from pulmonary tuberculosis when examined in childhood, for some of them were bound to be subjected, in the ordinary hazard of life, to the risk of infection from existing cases. For instance the incidence in 1933 of new cases per 1,000 of the population in the age-group 15-25 was 1.57.

It must not be overlooked that the children examined by the tuberculosis officers (excluding contacts, representing one third of the children examined) had been sent there by medical men who suspected them to be suffering from tuberculosis, and in that case the children as a whole will be sub-normal.

There is another test which may be applied to check any cases which, after rejection at the dispensary, were certified as having died from pulmonary tuberculosis without again being seen by the tuberculosis officer. An examination of the 686 deaths in the seven years 1927 to 1933 of persons not notified as tuberculous during life does not reveal the name of a single person who had been rejected at the dispensaries as non-tuberculous in childhood.

#### CONCLUSIONS.

1. The conservative standard of diagnosis of pulmonary tuberculosis in children adopted in Lancashire appears to be justified by the after-results.

2. The consequent saving in sanatorium beds is a public benefit.

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## V.—ACTINOTHERAPY AT A TUBERCULOSIS DISPENSARY.

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In several previous annual reports and elsewhere I have dealt with the methods employed at the Eccles Dispensary for dealing with certain non-pulmonary conditions, especially lupus and cervical adenitis, mainly by the use of carbon arc and mercury vapour lamps. My previous paper<sup>1</sup> dealt with 273 patients so treated up to the 31st December, 1930. By the end of 1933 the number had increased to 439.

## TECHNIQUE.

The methods employed are based on those in use for many years at the London Hospital, in so far as the use of carbon arc and mercury vapour lamps for general light baths is concerned. Experience has shown that this technique is capable of successful application at a tuberculosis dispensary. The patients are treated in groups according to age and sex. Most of them attend three times a week, but latterly some have attended four times weekly, while others who are working have only attended once or twice a week. They receive exposures to general light baths for gradually increased periods, sitting naked, except for a loin cloth and with efficient protection for the eyes.

In the case of the carbon arc lamps, which are coupled in pairs, the initial period of exposure is 15 minutes back and 15 minutes front, increased at weekly intervals by 15 minutes each way to a maximum of 2½ hours. This is the method of choice. Sometimes, owing to increase in numbers, or where time is limited, mercury vapour (Jesioneck) lamps have been used for general exposures, the exposure times starting at one minute back and one minute front, increasing by one minute each way at weekly intervals to a maximum total exposure of 20 minutes. In certain cases of adenitis without softening, local exposure at one foot distance is used. As a result the gland either shrinks or softens, in which case it is aspirated.

Local applications of the Kromayer water-cooled mercury vapour lamps are used in the case of lupus, as we have not a Finsen lamp, but where this disease is extensive and not on the face a preliminary treatment with creosote and salicylic acid plaster, which picks out the diseased areas, is very useful. Acid nitrate of mercury is used for small residues, and Brooks' ointment is useful when patients are unable for any reason to attend, or at the completion of a course of light treatment. Local treatment also receives attention. Aspiration or incision of



abscesses, division of keloid bands, etc., are also part of the routine local treatment. All this is but to say that light treatment must be used intelligently : light will stimulate fibrosis ; it will not remove a keloid (fibrotic tissue) ; it may give rise to abscess formation ; it will not automatically evacuate the pus.

In any light clinic, a certain number of patients cease attendance prematurely (see footnote to Table 7). This may be due to economic reasons and a return to work, admission to a residential institution, pregnancy, or occasionally to slackness, but our patients have on the whole attended regularly.

With the carbon arc lamps a long flame is used, and Siemen's grade A carbons have been found to be efficient and to produce a minimum of dust and smoke. Pigmentation is essential evidence of "light" action, and is usually readily obtained, more so in the dark-skinned than in the fair. When the pigmentation becomes very deep it acts as a barrier to action by light, and the patient should then stop having general baths until the pigmentation has worn away, although local treatment can be continued. A certain few cases of lupus are intractable to any form of treatment, but most respond well to actinotherapy. The results in cervical adenitis and other superficial tuberculosis lesions are even better, but deep-seated lesions should be treated at residential institutions. In cases of cervical adenitis, the results, based on long observation, are much better after actinotherapy than after operation, except in those fortunate individuals who come under the care of a surgeon specially interested and experienced in this work. The single, firm, freely-moveable gland is often suitable for removal by operation, but we often see at our clinics patients who have only recently returned from general hospitals after so-called removal of the glands.

The average periods of light treatment given to the cases discharged as quiescent were as follow :—Lupus and skin,  $10\frac{3}{4}$  months ; glands with softening,  $6\frac{1}{4}$  months ; glands without softening,  $7\frac{3}{4}$  months. The number of exposures per week in most cases is three, but for patients at work one or two per week. No patient was able to make 100 per cent. attendances.

#### IMMEDIATE RESULTS.

Table 7 following shows the immediate results of 439 individual patients who received artificial light treatment at the Eccles Dispensary during the period 1st December, 1927, to the 31st December, 1933 :—



TABLE 7.

Type of case.	Total cases treated.	Condition on ceasing light treatment.			Ceased treatment for other reasons. †	Still on light treatment on 31-12-33.
		Quiescent and apparently well.*	Improved.	Stationary.		
Lupus and skin ... ..	117	75	7	—	26	9
Adenitis with softening ... ..	152	116	1	—	25	10
Adenitis without softening ... ..	118	66	1	1	29	21
Bones and joints ... ..	32	13	5	3	11	—
Abdomen ... ..	11	8	1	1	1	—
Other non-pulmonary conditions ... ..	9	3	1	—	5	—
TOTAL ... ..	439	281	16	5	97	40

\* The term "quiescent and apparently well" has been chosen to express the condition of a lesion which has been healed by artificial light treatment. By direction of the Ministry of Health no case of non-pulmonary tuberculosis is written off the tuberculosis register as "recovered" until three years have elapsed without any signs or symptoms of active disease.

† The reasons for ceasing treatment were:—Unable to continue on account of work 26, pregnancy 2, foot trouble 1, domestic reasons 4; admitted to hospital 22; referred to skin hospital 4, Radium Institute (old x-ray cases—malignancy) 2; developed scarlet fever 1, nephritis 1, influenza 1; discharged for irregular attendance 19, temperamentally unsuitable 1, declined further treatment 5; left district 8; total 97.

The table shows that 281 patients were discharged as quiescent and apparently well. These included 75 cases of lupus and serofuloderma, and 182 cases of adenitis, *i.e.*, 91 per cent. and 98 per cent. respectively of those in the groups who completed a course of treatment. Sixteen were improved, and five stationary, while for the various reasons stated 97 did not complete a satisfactory course of treatment, but the condition of most of them was improved.

The following Table 8 shows that 46 patients who were discharged as quiescent and apparently well received additional periods of light treatment:—

TABLE 8.

Type of case.	Number of patients.	Average interval between end of first period and beginning of second period.
Lupus and skin ... ..	22	23 months.
Adenitis with softening ... ..	15	23 months.
Adenitis without softening ... ..	8	15 months.
Other non-pulmonary conditions	1	22 months.

A return to treatment is sometimes necessary, as relapses are apt to occur, whenever any undue strain upsets the balance between

a patient's resistance and the bacilli that are lying dormant. Overtime at work and such conditions as intercurrent diseases are particularly likely to be followed by relapse.

Actinotherapy is not a specific cure for tuberculosis, but it does serve in most cases to raise a patient's resistance, thereby enabling him to overcome the disease or to keep it in check. On the other hand, in lupus there is also direct action of the rays on the diseased skin, when the Kromayer lamp is used. The preceding Table 8 also shows the average interval between the cessation of treatment and the beginning of subsequent light baths. In the case of lupus and adenitis with softening it was 23 months, while for adenitis without softening it was 15 months.

#### AFTER-HISTORIES.

Between the 1st December, 1927, and the 31st December, 1930, there were 152 patients discharged from light treatment as quiescent and apparently well. As these cases have now been under supervision for a minimum of three years and a maximum of six years one month, sufficient time has elapsed to review the cases and see how they have fared. Consequently the position of these patients at the end of 1933 has been ascertained, and is given in the following table :—

TABLE 9.

Type of case.	Number of patients discharged as quiescent and apparently well 1-12-27 to 31-12-30.	Deductions for removals, etc. *	Number traceable on 31-12-33.	Position at end of 1933 (3 to 6 years after).				Number of patients in column (4) who relapsed and received a subsequent period of light treatment.
				Disease quiescent or arrested.		Disease active.		
				No.	%	No.	%	
Lupus and skin ... ..	56	13	43	26	60	17	40	4
Adenitis with softening ...	64	8	56	53	95	3	5	9
Adenitis without softening	15	1	14	14	100	—	—	6
Abdomen ... ..	6	3	3	3	100	—	—	—
Bones and joints ... ..	9	2	7	5	71	2	29	—
Other non-pulmonary conditions ... ..	2	—	2	2	100	—	—	1
TOTAL ... ..	152	27	125	103	82	22	18	20

\* Deductions include: Patients left district 18, declined further treatment 2, developed pulmonary tuberculosis 5 and other non-pulmonary condition 1, died from other than tuberculosis 1.

The foregoing table of after-histories is important as showing that of all the cases discharged as quiescent, 82 per cent. remained quiescent from 3 to 6 years after the termination of their treatment. The percentages for the adenitis and lupus cases were 96 and 60



respectively. The remaining 18 per cent. (22 cases) were attending one of the dispensaries on account of small foci of activity suitable for local treatment, *e.g.*, spiking.

Some very severe cases of lupus have been treated, and the duration of treatment has sometimes extended over several years. Several of the latter had previously received x-ray and other forms of treatment elsewhere with subsequent recurrence, and, in two cases, the development of malignancy. It appears to be impossible to prevent relapse in all cases, when patients return to work or their old mode of life and no longer have the benefit of light treatment. When circumstances permit, further prophylactic light baths would appear to be desirable.

Five patients (2 lupus, 3 adenitis) subsequently showed evidence of pulmonary tuberculosis :—

1. L.H., aged 20. First seen in 1923. Had treatment at a skin hospital for lupus and subsequently two periods of light treatment at Eeles Dispensary, but was an irregular attender. The second period ceased in May, 1931 ; she worked until June, 1932, and in August, 1932, her sputum contained tubercle bacilli. No x-ray of chest.
2. M. C., aged 30. First seen in May, 1924. Lupus of nose ; duration six years ; had previous treatment at skin hospital. Not x-rayed. Light treatment 20-1-28 to 13-2-29. Discharged as quiescent. Treated for pneumonia and pleurisy in May, 1929 ; x-ray in June, 1929, showed bilateral pulmonary tuberculosis.
3. G. R., aged 24. Adenitis neck and sinus ; duration many years. Operation 1924. First attended dispensary 1926. No x-ray of chest. Had light treatment September, 1929 to February, 1930. October, 1930, had tubercle bacilli in sputum. X-ray showed evidence of disease with fibrosis upper part of right lung.
4. R. B., aged 42. First seen in 1927. Duration of adenitis  $3\frac{1}{2}$  years. No x-ray of chest. Three periods of light treatment, *viz.*, 5 months, 2 months, 5 months, ending June, 1932. Condition quiescent. Worked from June, 1932, to January, 1934, then had a cough. Sputum positive.
5. G. H., aged 68. Adenitis and sinus right neck and axilla. Sternal abscess. First seen May, 1928. X-ray of chest negative. Light treatment August, 1928, to January, 1930. In March, 1930, x-ray evidence of bilateral disease. No tubercle bacilli ever found in sputum.

It will be noted that all five cases were over 16 years of age. Similar cases have been reported at other light clinics,<sup>2</sup> but it is impossible to decide whether the pulmonary disease was a coincidence or whether it was due to activation by light treatment. Recent observations have shown that pulmonary tuberculosis follows a gross glandular lesion more frequently than has hitherto been recorded. Thus, Dunlop<sup>3</sup> found that of 68 consecutive cases of pulmonary tuberculosis, 13 had previously had a glandular lesion, and Cumming<sup>4</sup> similarly found 12 glandular cases out of 221 unselected pulmonary cases in three institutions. It would thus not be fair to conclude that the light baths were responsible for the five cases here reported. On



the other hand, it is clear that light baths cannot be relied upon to prevent in every case the development of a new pulmonary focus in glandular cases, or the re-activation of an old one. The practice of extreme caution in the matter of light baths to patients with x-ray evidence of pulmonary tuberculosis appears to be indicated. It has for a long time been my practice to take a skiagram of the chest of every case before beginning light treatment, and to reject for general light baths such cases as show evidence of old tuberculosis lesions in the lungs.

#### COMMENT.

In considering the after-histories, patients who have left the district and were untraceable have been excluded. As it is reasonable to assume that at least some of these cases have remained quiescent, the after-results are probably better than the foregoing figures would indicate. The condition of the patients traced at the end of 1933 (82 per cent. remaining quiescent or arrested after three to six years) may be regarded as very satisfactory. The adenitis cases (96 per cent. remaining quiescent or arrested) have done remarkably well. The results of the lupus cases, many of which were severe and of long duration, were also satisfactory in the circumstances, but have not been so good as those obtainable by the use of the Finsen lamp. Fortunately, lupus is a disappearing disease, and only nine such cases were receiving light treatment at the Eccles clinic at the end of 1933. On the other hand, patients with adenitis are plentiful, and seem likely to provide a suitable type of case for light treatment for some time to come. A few persons, who were unable owing to distance or other cause to attend the light clinic, have been sent to residential open-air institutions or to general hospitals. The results, however, have not been better than those obtainable by out-patients at the light clinic; relapses have been frequent and the cost of treatment much greater.

In order to secure a reasonable number of uniformly successful results certain essentials are necessary :—

1. The physician must thoroughly understand and believe in the method of his choice, even though the technique may differ from that here described.
2. He must be supported by assistants and nurses who are carefully trained in the necessary technique, and who can be trusted loyally to carry it out.
3. Careful attention to detail and regular attendance on the part of the patients are vital factors.

I am indebted to my Assistant, Dr. A. B. Jamieson, and to Miss H. M. Shakespeare and other dispensary nurses for the painstaking care and attention they have given to the patients and the general work of the clinic.

#### CONCLUSIONS.

1. The good immediate results shown in the first paper<sup>1</sup> have been maintained with an increased number of patients.
2. The after-results of the 152 patients who were discharged from the Eccles light clinic as quiescent and apparently well during the period 1927–1930 are very satisfactory; 82 per cent. of all the cases so discharged, and no less than 96 per cent. of adenitis cases, were still quiescent after three to six years.
3. In general, the results after actinotherapy, combined with ancillary forms of treatment, are superior to those after operation, and the cost is much less than if residential treatment had been provided.

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## VI.—ARTIFICIAL PNEUMOTHORAX.

A SURVEY OF 64 CASES INDUCED AT RUFFORD PULMONARY HOSPITAL,  
MATCHED WITH CONTROLS.

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The object of this survey is to estimate the value of artificial pneumothorax treatment, by tracing the after-histories of patients who received this form of treatment and comparing the findings with the after-histories of similar patients who did not receive artificial pneumothorax treatment. Only patients treated prior to 1932 are dealt with, in order that a reasonable period of "after-history" may be ensured. By including the 1932 inductions the number of cases of artificial pneumothorax available for study would be increased from 64 to 100, but it is considered that the period during which the patients could be followed up would then be so seriously diminished as to detract from the total value of the results.

The ideal measure of the value of any therapeutic procedure would be, of course, the comparison of the results of giving and withholding the treatment in question in the same patient, or the same group of patients. But as this is unattainable it becomes necessary to select a group of patients who do not receive the treatment in question to serve as controls for those who do.

There are many methods of doing this, with all of which some fault can be found. One might compare the results in an institution where artificial pneumothorax is carried out, with those in another institution where, owing to absence of x-ray facilities, artificial pneumothorax treatment is not done. The opportunities for fallacious deductions from such a comparison are too obvious to require description.

Or one might compare the results in a given institution before and after the adoption of artificial pneumothorax treatment. But here again the comparison would be unsatisfactory owing to the uncertainty that similar patients were being dealt with in the two periods, and to the fact that time alone makes an appreciable difference in all vital statistics, apart from special forms of treatment.

A better method of comparison appears to be to use as controls for patients who received artificial pneumothorax treatment those who were considered suitable for this form of treatment and (a) declined to have it, (b) in whom a satisfactory collapse could not be obtained, or (c) in whom the treatment was not continued for more than a specified short period, say three months.



It is evident, however, that those who decline to accept artificial pneumothorax treatment are not temperamentally similar to those who accept: those who decline are probably of an unstable or "highly strung" temperament, which renders them more difficult to treat successfully by any means. They thus would tend, if used as controls, to give an unfair advantage to the results of artificial pneumothorax treatment, and while the effect might be small, this is only one of the objections raised against the use of such persons as controls.

The second objection appears to be definitely more weighty, for the usual reason for failure to establish an artificial pneumothorax is adhesion of the visceral and parietal pleuræ, and it does not seem sound to compare the after-history of patients with free pleuræ with that of patients with adherent pleuræ and attribute the difference to any special form of treatment which may have been employed.

The third objection—cessation of artificial pneumothorax treatment after a short period—usually amounts, in the writer's experience, to a combination of the other two—either that the patient is unwilling to continue with the treatment, or that adhesions prevent a useful degree of collapse being obtained.

A consideration of the foregoing difficulties led the writer to seek a group of controls to which less objection might be raised. There can be no two opinions that the radiological picture is of prime importance in deciding whether a patient is suitable for artificial pneumothorax treatment, and the reason for this is, no doubt, that the consideration chiefly involved in the decision is the anatomical extent and distribution of the disease in the lungs. It was therefore decided to use for the purpose of this survey a group of control patients each of whom was matched with a pneumothorax patient in age, sex, sputum-content (T.B.+ or T.B.—), and radiological appearance of the lungs. The controls were selected from Rufford Hospital patients who were contemporary with the artificial pneumothorax patients with whom they are matched.

Assuming this matching to be perfect, one might say that on a given date two patients were of the same age and sex, were both T.B.+ or T.B.—, and showed equal amounts and types of disease in their lung skiagrams. One of the patients receives artificial pneumothorax treatment and the other does not, and as far as can be ascertained, this is the only difference in their treatment. It appears reasonable to attribute any significant difference in the progress of these patients to the difference in the treatment they received.

The matching, however, is not perfect, especially as regards the distribution of the disease; and if it were, one would want to know why one group of patients received artificial pneumothorax treatment while another group with similar radiograms did not. In the process

of matching, the *amount* of disease and its type (*e.g.*, as regards cavitation, pleural involvement, etc.) have been principally considered: the localisation of affected parts was necessarily a secondary consideration.

In order to test the accuracy of matching, the extent of lung involvement in each patient was measured by noting the number of zones affected in the skiagram, the right and left sides each being divided into upper, middle, and lower zones. This measurement aimed at estimating the ratio which the total of the affected areas of lung bore to the total of apparently unaffected areas. In order to exclude personal bias, the writer's estimate of the extent of lung involvement was submitted to Dr. C. W. Laird, the medical superintendent of the hospital, for corroboration and a few minor adjustments were made as the result of this conference.

The patients were all females, and all sputum positive. The average number of zones affected in the artificial pneumothorax group was 2·6, and in the control group 2·8. This slight inequality suggests that, on the whole, the patients who received artificial pneumothorax treatment were a little less extensively diseased than the control patients, and for this reason some small deduction must be made from the apparent value of artificial pneumothorax treatment. The average age of the artificial pneumothorax group was 25·2 years, and of the control group 26·5 years.

The principle of assuming equality of disease in two patients whose skiagrams show equal amounts of tuberculous infiltration might be objected to on the ground that although the amounts of disease appear equal on the date in question, the stage of equality may be merely the point of intersection in the progress of one patient who is on the up-grade and another who is on the down-grade.

This objection is valid, but unless there is reason to believe that it is always the artificial pneumothorax patient who is on the up-grade and always the control patient who is on the down-grade (or *vice versa*), one may assume that in a sufficient number of observations the errors due to this cause will cancel out.

In the discussion which follows, the artificial pneumothorax cases are divided into the following classes:—

(a) SUCCESSFUL A.P.'s., *i.e.*, patients in whom a complete or partial artificial pneumothorax was established and maintained for three months or more. A complete artificial pneumothorax signifies one in which there was more or less complete separation of the lung from the parietal pleura, except perhaps for some string-like adhesions.

(b) UNSUCCESSFUL A.P.'s., *i.e.*, patients in whom artificial pneumothorax could not be established, or in whom artificial pneumothorax (whether complete or partial) was maintained for less than three months.



The following simple grouping gives a bird's eye view of this classification :—

SUCCESSFUL A.P.'s.	{ Complete ...	...	36
	{ Partial ...	...	9
UNSUCCESSFUL A.P.'s.	...	...	19

It is difficult to present a concise analysis of the results of this survey, because they are not clear-cut and overwhelmingly in favour of artificial pneumothorax treatment. For example, it is found that patients who had a complete and successful artificial pneumothorax have an average after-lifetime (between the date of artificial pneumothorax and the end of 1933) of 3 years 0·4 months, compared with 2 years 7·5 months for the control group. The difference does not seem very marked, even when expressed as a percentage, since the artificial pneumothorax cases have an after-lifetime only 15 per cent. greater than the control cases. Included in the artificial pneumothorax cases, however, are patients of all degrees of activity and extent of disease, and their average after-lifetime subsequent to the induction of artificial pneumothorax is found to vary markedly with the initial extent of the disease, as shown in the following table :—

Table 10.—Average after-lifetime (to end of 1933) of successful and complete artificial pneumothorax cases according to extent of disease.

Number of zones affected.	Number of patients.	Average after-lifetime.	
Less than 1 ... ..	0	—	
1 to less than 2 ... ..	10	3 years	9·5 months.
2 „ „ „ 3 ... ..	14	3 „	1·4 „
3 „ „ „ 4 ... ..	10	2 „	2·5 „
4 „ „ „ 5 ... ..	2	1 „	5·5 „
5 „ „ „ 6 ... ..	0	—	

The following table gives corresponding information for the control group of patients :—

Table 11.—Average after-lifetime of control patients, between the dates of artificial pneumothorax in the corresponding artificial pneumothorax patients and the end of 1933.

Number of zones affected in artificial pneumothorax patients.	Number of control patients.	Average after-lifetime.	
Less than 1 ... ..	0	—	
1 to less than 2 ... ..	10	3 years	1·7 months.
2 „ „ „ 3 ... ..	14	2 „	2·7 „
3 „ „ „ 4 ... ..	10	2 „	3·1 „
4 „ „ „ 5 ... ..	2	4 „	8·0 „
5 „ „ „ 6 ... ..	0	—	



A reliable comparison of these tables is made difficult by the small numbers concerned, but the figures suggest the general conclusion that artificial pneumothorax is of most value—judged by prolongation of life—when the extent of disease in the lungs is not more than three zones. The average after-lifetime of artificial pneumothorax patients in this category is 30 per cent. greater than that of the control patients.

Another means of assessing the value of artificial pneumothorax treatment is to consider the condition of artificial pneumothorax patients and controls at yearly intervals after the induction of artificial pneumothorax. The condition may be judged by working capacity, quiescence, or classification as alive or dead. The following statement shows this last classification :—

Successful and complete artificial pneumothorax cases and their controls.

Of 36 followed up for 1 year, 33 artificial pneumothorax patients and 31 controls were alive*										
Of 36	„	„	2	„	28	„	„	„	„	22
Of 31	„	„	3	„	21	„	„	„	„	13
Of 21	„	„	4	„	11	„	„	„	„	8
Of 11	„	„	5	„	3	„	„	„	„	5
Of 6	„	„	6	„	1	„	„	„	„	4
Of 1	„	„	7	„	1	„	„	„	„	1

\* The remainder were dead, and not merely unaccounted for.

The next table shows these figures as percentages :—

Table 12.—Percentage still alive 1–7 years after induction of artificial pneumothorax.

Years.			Artificial pneumothorax patients.	Controls.
			%	%
1	...	...	92	86
2	...	...	78	61
3	...	...	68	42
4	...	...	52	38
5	...	...	27	45
6	...	...	17	67
7	...	...	100	100

Omitting the small numbers of patients in the groups followed up for 5, 6, and 7 years, these tables suggest that the beneficial effects of artificial pneumothorax treatment become more marked with the passage of time. Thus the ratio  $\frac{\% \text{ of A.P. cases alive}}{\% \text{ of controls alive}}$  increases from little more than 1 in the first year, to one and a half in the third and fourth years after induction of artificial pneumothorax.

There thus appears to be definite evidence for stating that artificial pneumothorax prolongs life in patients suffering from pulmonary tuberculosis. The relative extent of this prolongation varies in different patients according to the severity of their disease, being greatest when the disease is of slight or moderate extent.

The fact that the prolongation of life by artificial pneumothorax treatment is found to be only 30 per cent. greater than that of control patients is possibly to be explained by the inclusion of a number of patients to whom artificial pneumothorax treatment was given six or seven years ago, but whom a more strict selection of cases would now exclude from this form of treatment. Considering, however, only successful and complete artificial pneumothorax cases with not more than three zones involved, and induced during the three years, 1929, 1930, and 1931, it is found that there are 23 such cases, with an average after-lifetime (to the end of 1933) still only 30 per cent. greater than that of their control patients (2 years 10·1 months, and 2 years 2·2 months, respectively). This figure therefore appears to be the most favourable for artificial pneumothorax treatment that can be deduced from the available records.

When a selection is made of individual patients who are known to have made excellent progress after artificial pneumothorax treatment, it is found that their average after-lifetime is 50 per cent. greater than that of their controls ( $4\frac{1}{2}$  years and 3 years respectively). It is of interest to note that among this selected group of patients who did well, the proportions of right- and left-sided artificial pneumothorax inductions were equal. The benefit to be derived from artificial pneumothorax treatment does not, therefore, appear to be influenced by the side treated. For *all* the successful and complete artificial pneumothorax cases under review (36 in number) the average after-lifetime in right-sided cases (14 in number, average involvement 2·1 zones) was 3 years 2·2 months. For left-sided cases (22 in number, average involvement 2·5 zones) the average after-lifetime was 2 years 11·2 months. Taking into consideration the different degrees of lung involvement in the two groups, it cannot be said that either right- or left-sided disease offers a greater prospect of benefit from artificial pneumothorax treatment.

With regard to the 19 unsuccessful artificial pneumothorax cases, it is found that their average after-lifetime is 1 year 10·0 months, compared with 1 year 10·4 months for their control patients. This equality is only to be expected, and is some evidence (a) that no harm was done by attempting artificial pneumothorax treatment in these patients, and (b) that the matching of the 19 patients with their controls was reasonably accurate. Actually the average involvement in these



patients was 2·84 zones and in their controls 3·00 zones. The average age of the 19 unsuccessful artificial pneumothorax patients was 27·6 years, compared with 24·9 years for the group of successful and complete cases. While these figures may suggest that artificial pneumothorax is more easily established in a younger than an older patient, they do not, of course, justify the assumption that the results of artificial pneumothorax treatment are better in younger patients. As a matter of fact it is found that of the "successful and complete" group of artificial pneumothorax cases, 22 were aged 25 or less, and the average after-lifetime of these 22 was only 23 per cent. greater than that of their controls. It is evident, therefore, that a successful result from artificial pneumothorax treatment depends more upon the limitation of the disease in the lungs than upon the youth of the patient.

Turning now to the question of working capacity as the next best measure of the value of artificial pneumothorax treatment, the following are the findings. The total number of years of *full* working capacity between the induction of artificial pneumothorax and the date of the enquiry, for the 36 successful and complete artificial pneumothorax patients and their controls, was computed by ascertaining from the patients' records, through the courtesy of the consultant tuberculosis officers concerned, the condition as regards working capacity of each artificial pneumothorax patient and control at yearly intervals after the induction, and assessing slight working capacity and moderate working capacity as  $\frac{1}{3}$  and  $\frac{2}{3}$  respectively of full working capacity.

The total for the 36 artificial pneumothorax patients was  $65\frac{1}{3}$  years, and for the controls  $30\frac{1}{3}$  years of full working capacity, and the average period of following-up, between induction and the end of the enquiry, was  $3\frac{5}{8}$  years.

The average working capacity of the artificial pneumothorax patients during this time is therefore represented by the fraction  $\frac{65\frac{1}{3}}{36 \times 3\frac{5}{8}}$ , or 0·47, and of the controls by  $\frac{30\frac{1}{3}}{36 \times 3\frac{5}{8}}$ , or 0·22. According to the arbitrary scale specified, these figures indicate slight to moderate working capacity as the average for the artificial pneumothorax patients, and nil to slight as the average for the controls, subsequent to the date of artificial pneumothorax treatment. They also indicate that the average working capacity of the artificial pneumothorax patients during the years following induction (to the end of the enquiry) was rather more than twice that of the control patients. This favourable figure is, of course, partly due to the fact that the artificial pneumothorax patients lived longer than the controls, but after making allowance for the 15 per cent. extra lifetime of the artificial pneumothorax patients (see page 27) their average working



capacity is found to be almost twice (actually 1.9 times) that of their controls. It is perhaps unwise to stress this ratio unduly, partly because the patients were women—in whom working capacity is particularly difficult to assess—and partly on account of the uncertainty which must always attach to any statement of working capacity. It does appear, however, that in addition to the prolongation of life brought about by artificial pneumothorax treatment, it produces a definite improvement in the patients' condition, as measured by working capacity.

It is felt that while a further study of these artificial pneumothorax cases and controls from the standpoints of clinical quiescence and T.B. content of the sputum could be made with the information available regarding them, these two criteria are so much more indefinite than the others already studied that any results which might emerge could have little value. Apart from the fact that the conception of quiescence is notoriously protean, it does not appear to be of much practical importance whether artificial pneumothorax treatment brings about a condition marked by absence of signs and symptoms of disease (including a positive sputum) unless there is a corresponding measure of working capacity. It appears to the writer that if sufficient detail is taken into consideration in assessing quiescence, it will show an approximate correlation to working capacity.

Bacillary loss in the sputum is another of those measurements which are much less definite than the title would lead one to expect. If it could be shown that artificial pneumothorax treatment rendered a positive sputum quickly and permanently negative, this would be a valuable finding. But what do we mean by "permanently"? Unless this is defined, it appears futile to speak of the sputum being rendered negative. It may be said, however, from the available figures that the records of 92 sputum examinations in the 45 successful artificial pneumothorax patients at varying intervals after the commencement of treatment showed 42 per cent. to be negative, compared with only 20 per cent. for control patients (78 sputum examinations). The greater number of sputum examinations made in the case of the artificial pneumothorax patients is no doubt a reflection of the interest manifested in the result of treatment, but apart from this the figures are not selected in any way, but represent a fair sample of the total available information regarding both groups of patients—actually the latest sputum results recorded in each year. They appear to indicate quite definitely that artificial pneumothorax treatment helps to render the sputum negative. This finding is in harmony with those already stated regarding working capacity and prolongation of life in patients treated by artificial pneumothorax.

I wish to acknowledge my indebtedness to Dr. G. Lissant Cox for originating the survey and providing the facilities for carrying it out; to Dr. C. W. Laird, medical superintendent of Rufford Pulmonary Hospital, for placing his clinical material and records at my disposal, and for his interest and advice during the enquiry; and to the consultant tuberculosis officers in the various areas of the County and in outside areas for assistance in tracing the after-histories of the patients dealt with in the survey.

The following summary expresses briefly the findings arising from this survey :—

#### SUMMARY.

(1) This study is an attempt to estimate the value of artificial pneumothorax treatment by comparing the progress of patients who received this treatment with that of *similar* patients who did not, the similarity being judged by age, sex, sputum-content, and radiological appearance of the lungs.

(2) 36 patients in whom a successful and complete artificial pneumothorax was established showed a greater survival rate than their control patients to the extent of 15 per cent.

(3) 24 patients in whom a successful and complete artificial pneumothorax was established, and in whom not more than three lung zones appeared to be involved, showed a survival rate 30 per cent. greater than their control patients.

(4) 22 patients, aged 25 or less, in whom a successful and complete artificial pneumothorax was established, showed a survival rate 23 per cent. greater than their controls.

(5) It appears from (3) and (4) above that limitation of disease is more conducive to a favourable result from artificial pneumothorax treatment than is the youth of the patients.

(6) 8 patients who were known to have made excellent progress after artificial pneumothorax treatment—"show cases"—showed a survival rate 50 per cent. greater than their controls.

(7) Right- and left-sided disease appear to offer equal prospects of benefit from artificial pneumothorax treatment.

(8) 19 patients treated unsuccessfully by artificial pneumothorax showed a survival rate no greater than their controls.

(9) 36 patients in whom a successful and complete artificial pneumothorax was established showed approximately double the working capacity of their controls in the period between artificial pneumothorax induction and the end of the enquiry.



(10) 45 patients in whom a successful artificial pneumothorax was established showed approximately double the proportion of negative results in subsequent sputum examinations, as compared with their control patients.

(11) There appears to be no doubt that artificial pneumothorax treatment is of value, the greatest benefit being obtained when the extent of lung involvement is small. It appears probable that if this investigation were concerned with *sanatorium* instead of *pulmonary hospital* patients the results would be more strikingly favourable to artificial pneumothorax treatment.

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## VII.—INHALATION THERAPY IN PULMONARY TUBERCULOSIS BY THE APNEU COLLISON INHALER.

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Of the many ways by which drugs can be introduced into the body, perhaps that by way of the air passages has received least attention until recently.

By inhalation therapy is meant treatment by inhaling drugs into the respiratory tract, which includes the nose, pharynx, larynx, trachea, bronchi and the alveoli of the lung. Formerly inhalation was confined to volatile substances possessing curative or soothing properties, whereas to-day the scope of this therapy can be extended to a large number of chemical medicines, both oily and fluid in consistency.

At a first glance there does not seem to be anything very new in this method. The breathing of moist airs or vapours impregnated with soothing balsams has been a time-honoured method for the alleviation of acute catarrhal infections of the respiratory passages. The smelling bottle in syncopal attacks, the old bronchitis kettle, and the steam tent for croup, the use of such volatile substances as ether and chloroform, to mention only a few examples, are familiar to everyone and are in common use.

Having been successful so far with volatile substances and with gases like oxygen and carbon dioxide, which are, of course, easily inhaled, search was conducted with a view to determining whether or not it were possible to convert some of the denser substances, *e.g.*, oils and fluids, into a vapour form. Then came the sprays, atomizers and nebulizers, for blowing liquids and oils into a fine state of division, and the insufflators for propelling solids in a finely triturated condition into the air passages. All the foregoing measures were successful as far as they went, but on examining the results of the oils it was found that owing to their molecular weight they tended to fall rapidly on the mucous membranes of the air passages, and consequently did not penetrate very far into the ramifications of the lungs. It had long been known as a physical and chemical fact that elements and compounds, when in the finest state of division possible, gave quicker and more satisfactory chemical reactions. Hence the idea of fine subdivision of the particles had a two-fold use; on the one hand to get deeper into the air passages, and on the other to obtain as quick and as potent an action as possible of the drugs on the surfaces of the lungs. As the alveolar surfaces of the lungs are estimated to be at



least 40 times greater in area than the exterior surfaces of the body, it would seem that if drugs having the fore-mentioned properties could be deposited thereon some benefit might accrue. It was found that drugs could be so deposited and absorbed. It was also established that local treatment to the respiratory passages could best be given by applying drugs which were not absorbed too rapidly. On this account oily substances were often found preferable. Experiments on animals have shown that if the drugs can be atomised sufficiently finely they can be made to reach the alveoli. For instance, in the case of camphor it is found that it can be absorbed by the blood and excreted in the breath, like garlic. The lungs like to absorb substances of the least density, the less dense the better they are taken into the pulmonary tissues. The hand-sprays dispense oils and fluids in a fine state of division, but when the particles are inhaled they travel only a comparatively short distance along the air passages, probably only as far as the larynx or, at most, the trachea. These atomizers are very helpful for nasal, pharyngeal, laryngeal, and tracheal catarrhs, but will exert little or no effect on bronchitis. Constant use is made of these daily in the sanatorium. They may, however, prove troublesome, since the drugs become deposited in the pharynx and may be swallowed, causing digestive troubles. To obtain the best results the particles must be fine and dense. Even then only 20 to 30 per cent. of the nebulized drug reaches the termini of the bronchi. It was thought that if it were possible to obtain a direct action in the lung it might in some degree act as a useful adjuvant to sanatorium treatment.

With a view to ascertaining the effect of inhalation treatment in pulmonary tuberculosis, a nebulizing apparatus called the Apneu (Speiss-Drager) Inhaling Apparatus was hired. This apparatus is mounted on a 40 cubic foot compressed air cylinder. The air, controlled as in an oxygen cylinder, is forced through two phials, one of which is amber in colour and is used to contain the photosynthetic drugs like adrenalin, the other a white phial of clear glass accommodates other drugs, either oils or fluids. The compressed air may be forced through each separately or both simultaneously by a special arrangement of valves. The quantity of air in the cylinder, and the rate at which it is passing out of the cylinder are registered on two manometers. Each phial contains an atomizer which dips into the fluid in the conical bottom for a short distance. The vapour thus created passes along into a mixing and depositing chamber, almost like a motor carburetter, thence along to the valved face mask which fits comfortably over the patient's mouth and nose.

This apparatus was very satisfactory and much appreciated by the patients. Encouraged by this appliance, an English model much

on the same lines but more compact and convenient in size, easier to control and more foolproof, was obtained. The phials are smaller and more easily detached for refilling and cleaning. This model, described as the Apneu Collison Inhaler is mounted as previously described. It has one manometer only, showing the pressure in atmospheres in the cylinder. A single valve dispenses the compressed air in weak, medium, or strong power. A second valve controls the phials, singly or simultaneously or allows plain air alone to pass to the mask as required. The 40 cubic foot cylinder is convenient for lifting, and when placed in a cylinder trolley can easily be moved to and from the bedside.

As the fineness of the particles is determined by the strength of pressure, the greater the pressure the finer the particles. A full cylinder gives better results than one that has been in use for some time. The particles have been measured and found to be as small as  $1/5000$ th of an inch, whereas those from the best handsprays are computed to measure about  $1/50$ th of an inch. The inhalations can be given warm or cold, in large or small doses. The routine has been to prescribe adrenalin put up in the form of adrenalin synthetic  $1/1000$  and 1% anæsthesin. The latter is included to relieve the irritating effect of adrenalin. This nebulized drug may be given weak, medium, or strong, according to the needs of the patient, the medium strength usually sufficing. This is continued for three minutes, followed by a rest of three minutes. The valve is then switched over to the other phial which may contain many kinds of oils, *e.g.*, camphor, pine, cypress, cajuput, thymol, menthol, or creosote, etc. Adrenalin dilates the bronchial tubes and reduces congestion. It has been said of it that acting on any part it has the same effect as stimulation of the sympathetic nerve to the part. For this reason it is by far the most effective treatment in an allergic crisis, for it both neutralizes histamine in an allergic crisis, as well as stimulates the sympathetic, that is, the inhibitory nerve to plain muscles such as those of the uterus, intestines and bronchi. Camphor stimulates the breathing centres and blood circulation. Pine, cajuput, and cypress are very soothing to the inflamed mucous membrane. Thymol and menthol are antiseptic and cleaning, and creosote is a disinfectant. Iodine, ordinarily very irritating, can be given easily in such fine division.

The treatment, which is given when necessary, has been found soothing to the patient, quite safe, and very efficient. It relieves distress from asthma, bronchitis, laryngitis, pneumonia, and other pathological conditions associated with pulmonary tuberculosis. It has been used regularly at Elswick Sanatorium in cases of pulmonary tuberculosis complicated by asthma, in the mixed infection bronchitis



in tubercle for loosening phlegm, draining bronchi and emptying cavities ; for relieving nocturnal cough and promoting sleep ; after cases of spontaneous pneumothorax to dilate the bronchi and allow the phlegm to escape from the compressing lung ; in cases with acute laryngitis ; after severe hæmoptysis to clear the lung and prevent the inspiratory bronchitis so often occurring. Patients of all ages can take the treatment, but children tolerate larger doses.

Inhalations quickly relieve the broncho-spasm in cases of tuberculosis complicated by asthma. In cases of shock after induction of artificial pneumothorax the adrenalin inhalations have aborted the symptoms. The life of a left-sided artificial pneumothorax case, who developed a spontaneous pneumothorax on the right side and was dying from acute asphyxiation, was saved by this apparatus as it kept her bronchi open until an aspiration could be performed. Since using the apparatus, patients with advanced tuberculosis do not seem to have developed laryngeal tuberculosis. This may be a coincidence, or may be due to the disinfectant and cleaning action of the drugs inhaled.

A typical prescription may be given as follows :—

INHALATION PRESCRIPTION.

INHALANT.	TIME (Mins.)	
	Inhale	Rest
(1) Adrenalin ...	3	
(2) Rest ...		3
(3) Camphor ...	3	
(4) Rest ...		3
(5) Adrenalin ...	3	

From this it will be seen that, at the shortest, about 15 minutes is necessary to obtain relief, and the patient may require two of these in the day or night. Particularly is the treatment indicated at night when patients are usually more uncomfortable. There is a wide range of drugs from which to choose a suitable medicine, but in practice these will eventually be limited to a few which give the necessary results.

Inhalation therapy by this method was found in practice to entail an extra amount of time and labour on the part of a number of the staff, nursing, clerical and outdoor. The constant ordering, exchanging, forwarding, delivering and returning cylinders was expensive. Means were sought to overcome some of these difficulties. Experiments were made with electric pumps and old cylinders, and as a result

40 c.ft. cylinders can now be charged with compressed air in the wards by the nurse in charge of the case. This means that good pressure can be maintained, assuring a satisfactory nebulization, and that the treatment becomes very much cheaper.

We are indebted to Major W. E. Collison for his courtesy and help in connection with this treatment.

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# VIII.—HYDNOCARPATES IN THE TREATMENT OF LUPUS VULGARIS.

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For some years now the most important factor in the treatment of leprosy has been the use of the fatty acids of chaulmoogra and hydnocarpus oils. It has been found that intradermal or intramuscular injections over long periods of time bring about resolution of the superficial lesions, with a relative absence of local and general reactions.

The particular technique now recommended by leprosy workers is the intradermal injection of esters of hydnocarpus oil. Plain hydnocarpus oil is inconvenient to use because of its viscosity, and alepol (a sodium salt of the lower melting-point fatty acids) is absorbed too quickly to obtain the desired local effect.

Cochrane<sup>1</sup> and Muir<sup>2</sup> agree that the action of the hydnocarpates is not a specific one, but the latter suggests that the results are due to the local irritant effect and possibly to the setting free of antigens by broken-down lesions.

The analogy between leprosy and tuberculosis has encouraged numerous attempts to employ these preparations in tuberculous lesions, and in 1933 Sir Leonard Rogers<sup>3</sup> reported a case of extensive lupus vulgaris which was successfully treated by intradermal injections of ethyl ester hydnocarpate.

A series of 14 cases of lupus vulgaris, as enumerated in Table 13 below, have been treated in this way at the Wigan County Dispensary.

Table 13.—Summary of treatment of 14 cases of lupus vulgaris by moogrol.

Case.	Site of disease.	Duration of disease.	Length of moogrol treatment.	*Approximate size of active areas in square centimetres.		Remarks.
				Before.	After.	
1. E.F.	Neck ... ..	10	9	27	nil	Quiescent.
2. N.M.	Elbow ... ..	14	17	—	—	Improved.
3. M.P.	Forehead and forearm	24	10	—	—	Improved.
4. A.H.	Forearm ... ..	40	10	25	12	Improved.
5. A.B.	Arm ... ..	10	5	—	—	Quiescent. Follicular type.
6. J.P.	Face and neck ...	13	13	17	9	Improved.
7. J.R.	Thigh ... ..	2	9	9	nil	Quiescent.
8. H.S.	Face ... ..	10	10	—	—	Quiescent. Follicular type.
9. H.L.	Face and neck ...	25	8	—	—	Slightly improved.
10. J.H.	Thigh ... ..	3	11	25	nil	Quiescent.
11. E.B.	Neck and wrist ...	23	10	36	32	Slightly improved.
12. M.W.	Cheek and ear ...	10	10	3	2	Slightly improved.
13. L.M.	Face ... ..	27	5	18	14	Improved.
14. H.H.	Buttocks ... ..	8	9	19	8	Improved.

\*Measurements are impracticable in some cases.

Previous treatment had consisted of artificial light therapy over periods ranging from one to five years, and in most cases the lesions had reached that curiously resistant stage in which the disease appears neither to be advancing nor healing.

In order that a fair trial might be made all artificial light therapy was stopped. The only additional method used has been the occasional "spiking" of a recurrent nodule with acid nitrate of mercury.

#### TECHNIQUE.

The substance used is prepared by Messrs. Burroughs, Wellcome and Co., under the name of "moogrol," and consists of ethyl chaulmoograte and ethyl hydnocarpate, together with the esters of the other acids present in hydnocarpus oil. Injections are made with an ordinary 1 c.c. hypodermic syringe fitted with an Agla 240 needle (B.W. & Co.). This is a 3 mm. needle with a guarded point. Patients attend weekly, and at each sitting a series of 5—10 wheals, 1 cm. in diameter, are raised in the edge of the lesion. A dry dressing is then applied. No area is injected a second time until all inflammatory changes have cleared. It is important to avoid subcutaneous injection as this causes more severe diffuse reactions, particularly on the face.

#### EFFECTS OF INJECTION.

No general reaction of any sort has been noted. The injection itself is practically painless, but during the next 48 hours a certain amount of redness and swelling develops accompanied by a moderate degree of pain. This lasts for one or two days. When the reaction is unduly severe iodized moogrol (containing 0.5 per cent. iodine) may be used. The effect is milder, but progress is less rapid.

After a few weeks a slowly progressive flattening of nodules and plaques occurs, together with a disappearance of scales and crusts. Tiny ulcers may appear in and around the site of injection. A varying degree of redness prevails, but gradually the active areas are replaced by pale, smooth scar tissue. The discoloration of the scar is much more persistent after iodized moogrol.

Moogrol is absorbed very slowly from the skin, and the effect on lupoid tissue is continued long after the purely irritant reaction has passed off. For this reason, one hesitates to regard the action entirely as a non-specific one, unless the changes be due, as Muir suggests, to the liberation of antigens.

#### COMMENT.

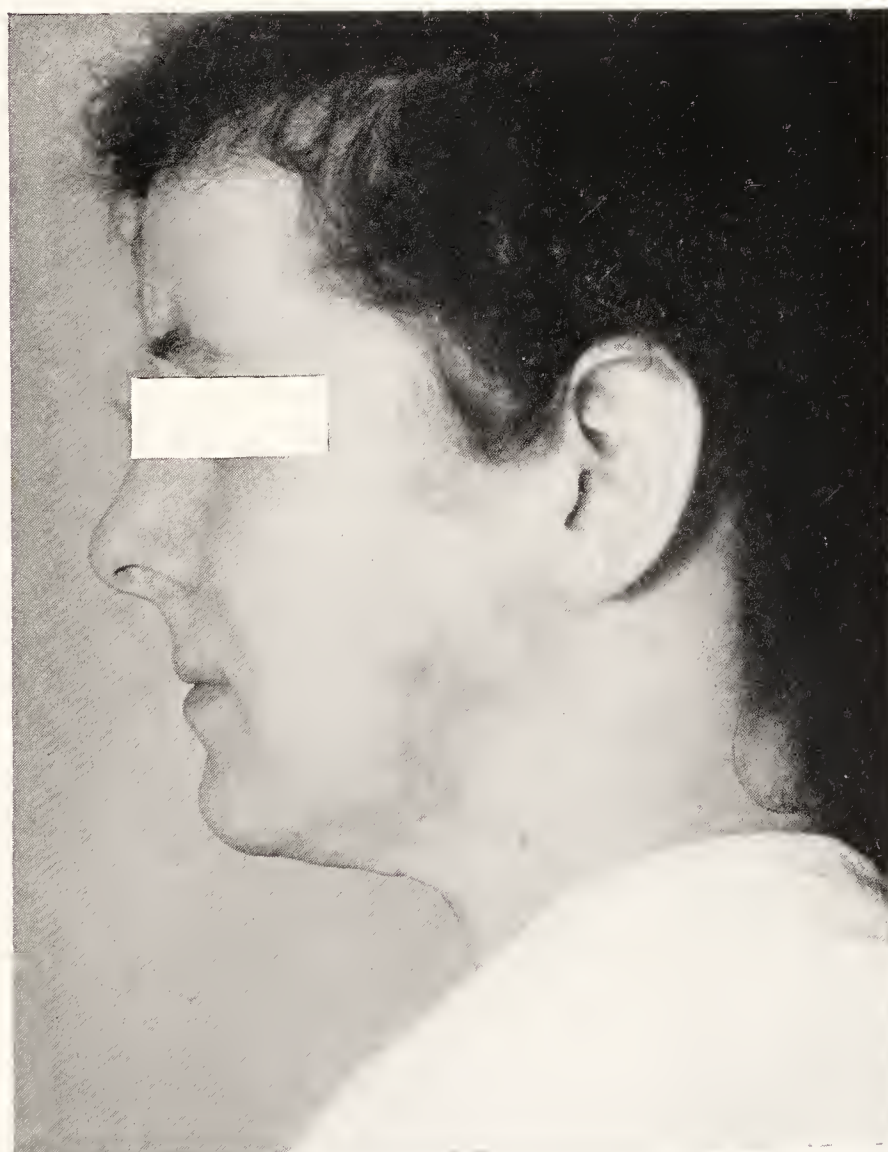
Reference to the table shows that of the 14 cases, five are quiescent, six have improved (some of these to a considerable extent)



# HYDNOCARPATES IN THE TREATMENT OF LUPUS VULGARIS.



L. 1(a).—E.F., female, aged 36 years. Lupus of neck of 10 years' duration. Photograph shows condition in February, 1933.



L. 1(b).—Same patient. Photograph taken 14-2-34 shows condition after patient had received nine months' moogrol treatment. Disease quiescent.

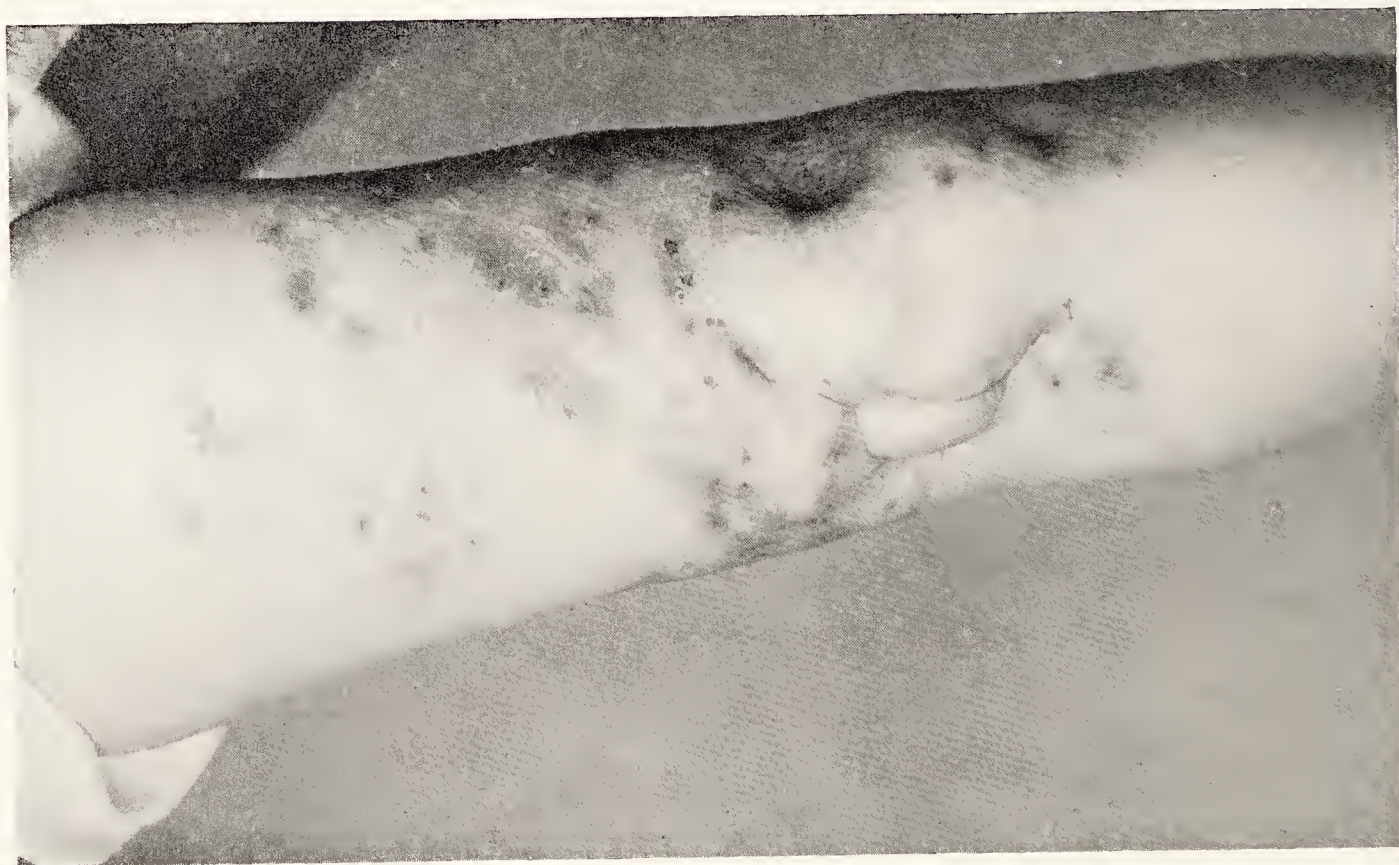
*[Photographs taken at Wigan County Dispensary.]*



## HYDROCORTISONE IN THE TREATMENT OF LUPUS VULGARIS (contd.).



L.2(a).—N.M., female, aged 30 years. Lupus of arm of 17 years' duration. Photograph shows condition in February, 1933.



L.2(b).—Same patient. Photograph taken 11-7-34 after patient had received 17 months' moogrol treatment. Condition markedly improved. Patient still under treatment.

[Photographs taken at Wigan County Dispensary.]



and three show slight improvement only. The average period of treatment per patient is 9·7 months.

These results are sufficiently encouraging to warrant a continued trial of this method. Progress on the whole has been more rapid than that made by artificial light treatment alone, and the reactions are definitely less painful than those resulting from the usual caustic applications. The patients are more satisfied with their condition, and are anxious to continue with moogrol.

Additional advantages are that the cost is negligible, and the technique so simple that the time factor also is reduced to a minimum.

#### REFERENCES.

<sup>1</sup>Cochrane, R. G. *Leprosy Review*, IV, No. 2, April, 1933.

<sup>2</sup>Muir, E. *Indian Medical Gazette*, LXVII, No. 3, March, 1932.

<sup>3</sup>Rogers, L, *B.M.J.*, 1933, I, 47.

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## IX.—NOTIFICATION OF TUBERCULOSIS CASES.

It is the statutory duty of every medical practitioner to notify within 48 hours to the local medical officer of health any case of tuberculosis occurring in his practice, and the medical officer of health is charged with the duty of keeping a corrected register of such cases reported in his sanitary district.

The statutory notifications are made under the Public Health (Tuberculosis) Regulations, 1930, which came into force on 1st January, 1931. These regulations consolidate the regulations issued in 1912, 1921 and 1924, and they also include several minor amendments of an administrative nature.

## NON-NOTIFICATION.

I have continued to direct special attention to the notification of cases of tuberculosis, and have engaged in correspondence with medical practitioners, medical officers of health, and medical superintendents, over many individual cases.

The extent of non-notification of pulmonary cases in the Administrative County is shown in the following Table 14 :—

Year.	Number of deaths from pulmonary tuberculosis recorded.	Deaths not notified under Regulations during life.	
		Number.	Percentage to pulmonary deaths.
1918	1652	303	18·3
1919	1339	221	16·5
1920	1323	177	13·3
1921	1301	135	10·3
1922	1362	105	7·7
1923	1250	85	6·8
1924	1215	64	5·2
1925	1205	67	5·5
1926	1158	58	5·0
1927	1105	54	4·8
1928	1066	56	5·2
1929	1102	62	5·6
1930	1046	46	4·3
1931	1021	61	5·9
1932	975	37	3·8
1933	1010	45*	4·4*

\* Of the 45 deaths which, in 1933, escaped statutory notification as tuberculous cases during life, it should be stated that 11 were known to the tuberculosis officer, and 11 died in mental hospitals, public assistance hospitals, and general hospitals. If these 22 deaths which



were known otherwise than by the official primary notification under the Regulations be deducted, then the percentage of 4·4 *non-notified fatal cases would be reduced to 2·3, which figure may be taken as the real extent of missed notifications resulting in cases escaping supervision by the health authorities.*

The improvement which has been secured in recent years in the notification of cases of pulmonary tuberculosis before death would not have been practicable without the cordial co-operation of the local medical officers of health and, of course, the general practitioners who make the notifications.

There is no doubt that in this Administrative County a much smaller proportion of cases of tuberculosis escapes notification than is frequently the experience in other parts of the country. Thus, we have a smaller proportion of unknown cases or unknown sources of infection remaining outside the measures for the control of tuberculosis.

For non-pulmonary tuberculosis, there were 31 non-notified fatal cases in 1933, which on the total deaths from this form of the disease equalled 13·3 per cent. The percentage in the previous year was 11·7.

#### SPECIAL ENQUIRY INTO NON-NOTIFIED FATAL CASES.

Commencing in October 1920, special investigations have been carried out in regard to every individual death recorded which had not been previously notified. The procedure followed has been to examine the names of persons dying from tuberculosis given in the weekly returns of deaths sent, by arrangement, to the tuberculosis department by the district registrars. The names are compared with the notification register, and the death of every person not previously reported as a case under the Public Health (Tuberculosis) Regulations is enquired into; information as to the circumstances attending non-notification is obtained from the tuberculosis officer and, if necessary, the medical attendant.

In 1933, there were 76 such deaths, and the enquiry for that year gave the following important results :—

(1) That 25 (11 pulmonary, 14 non-pulmonary) of the 76 deaths in 1933 occurred in public institutions.

(2) That of the remaining 51 deaths, the circumstances of non-notification were as stated in the following table :—

TABLE 15. *Circumstances of non-notification of fatal cases.*

	Period 1st January to 31st December, 1933		
	Pul- monary	Non-pul- monary	Total
Doctor in attendance shortly before death—			
1 week or less .. .. .	1	1	2
1 to 2 weeks .. .. .	—	3	3
2 to 3 weeks .. .. .	—	—	—
Complicated cases, presenting difficulty in diag- nosis .. .. .	3	5	8
Misinterpretation of Tuberculosis Regulations and notification believed to be unnecessary—			
Cases previously notified in another area ..	4	1	5
Cases known to tuberculosis officers—con- siderable doubt as to diagnosis in some of these cases .. .. .	11	2	13
No doctor in attendance .. .. .	5	1	6
Temporary residents .. .. .	1	—	1
Attended by more than one doctor, and notifi- cation believed to have been made by first practitioner .. .. .	3	1	4
Notified after death .. .. .	1	1	2
No apparent reason for non-notification .. ..	3	1	4
	32	16	48
Tuberculosis not primary cause of death .. ..	1	—	1
Information not ascertained.. .. .	1	1	2
TOTAL .. .. .	34	17	51

(3) *This table shows that in only 4 of the 51 deaths was there no reasonable excuse for non-notification.*

The efficiency of notification varies directly with the efficiency of the county council or county borough scheme dealing with tuberculosis. If there is no really comprehensive scheme, if there are poor and newly qualified, part-time, and badly paid tuberculosis officers, if there are insufficient means for expert diagnosis, and too few beds for treatment, then a high proportion of non-notified fatal cases will be the rule and not the exception.



## TOTAL "KNOWN SOURCES OF POSSIBLE INFECTION."

One effect of the better notification of cases by practitioners has been to add to the number of new cases in recent years and statistically to make the figures disadvantageously comparable with the earlier years when a larger number of cases escaped notification.

It is, however, possible to obtain a truer record of the number of new cases of pulmonary tuberculosis occurring year by year by adding together (*a*) the notifications and (*b*) the deaths which occurred without notification being made during life ; this total gives clearly the number of known sources of possible infection as Table 1 on page 2 shows.

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## X.—APPLICATIONS FOR TREATMENT.

Table 16 below shows the number of “new” patients (1,920) who applied for treatment under the County scheme during the year 1933 :—

	Number of applications received during 1933.	Diagnosis of new applicants for treatment.			
		Pulmonary cases.	Pulmonary and non-pulmonary.	Non-pulmonary cases.	Diagnosis not confirmed (non-tuberculous).
Men ... ..	822	653	26	136	7
Women ... ..	696	508	12	172	4
Boys ... ..	200	22	1	173	4
Girls ... ..	202	31	...	170	1
TOTAL ... ..	1,920	1,214	39	651	16

Applications received in previous years were :—1918–21 average, 2,294 ; 1922–25 average, 2,183 ; 1926–29 average, 2,177 ; 1930, 2,090 ; 1931, 1,855 ; 1932, 1,938 ; compared with 1933, 1,920. Thus there were 18 fewer applications than in 1932.

During 1933, there were 2,233 cases notified under the Public Health (Tuberculosis) Regulations as suffering from tuberculosis (all forms), whereas the number of persons who applied for treatment to the County Council was 1,920, equal to 85 per cent. of the notifications. The 15 per cent. of notified cases who did not apply for treatment consisted mainly of tuberculous persons in mental hospitals.

## CLASSIFICATION OF NEW PATIENTS.

*(a) Pulmonary tuberculosis.*

During 1933, applications for treatment were received from 1,253 new patients, and these were reported by the tuberculosis officers to be in the undermentioned stages of the disease on the first examination :—

T.B. minus (Sputum negative or absent) ... ..	457, or 36·5 per cent.
T.B. plus 1 (Early cases, sputum positive) ... ..	96, or 7·7 „ „
T.B. plus 2 (Intermediate cases, sputum positive) ... ..	517, or 41·2 „ „
T.B. plus 3 (Advanced cases, sputum positive) ... ..	183, or 14·6 „ „

It is well known that, throughout the country, tuberculosis officers do not see many of the new cases in the early stage of the disease.



Some patients through ignorance, others on account of economic reasons, neglect to consult a doctor when in the early stage, and so lessen their chance of recovery. In the Administrative County we have for several years made special investigations into the reasons underlying such disastrous delay on the part of patients. These investigations have been continued in 1933, yielding the following conclusions which correspond closely with those published in previous reports :—

1.—Altogether 67·8 per cent. of the 183 advanced cases either had no doctor or had only been attending their doctor for less than two months when first examined by the tuberculosis officer or notified. The corresponding percentage in 1932 was 66·7.

2.—After making allowance for a percentage of fulminating cases (“galloping consumption”), a large proportion—nearly three-fourths—of patients had felt ill for one or more months before consulting a doctor.

3.—The reason for late notification and patients delaying their application until in an advanced stage of the disease is chiefly the disinclination or unwillingness of the patients to report themselves to their doctor when feeling ill. This is due mainly to the insidious onset of the disease, the discomfort being only slight at first.

4.—There does not appear to be evidence in any large number of cases of unreasonable delay on the part of family doctors referring cases to the tuberculosis officer.

5.—The initiative to seek treatment when ill rests with the patient himself, and the only feasible remedy lies in the education of the public as to symptoms and common dangers of tuberculosis and the need for securing prompt treatment. This cannot be too strongly or too often emphasised.

In previous reports I have mentioned the teaching of hygiene to the older children at school, a matter which the Director of Education for the County has under consideration.

The tuberculosis medical staff have to depend very largely on the general practitioners throughout the County for bringing forward tuberculous patients, and it is satisfactory to note that 89 per cent. of new cases are sent *before notification* to the tuberculosis officers for an opinion as to diagnosis. Too much importance is still laid by some doctors on sputum examinations alone, and often too long a time is allowed to elapse in order that the sputum may be tested; or steps are not taken to report the case until it is returned as “positive.”

Co-operation also takes place between the tuberculosis medical staff and the school medical officers. The latter refer doubtful or suspicious cases to the tuberculosis officer; on the other hand the tuberculosis officer reports confidentially to the school medical officer the name of any school child who was or is actually in contact (*i.e.*, living in the same house) with an adult infectious case of pulmonary tuberculosis. The school medical officer is then able to take what action he considers desirable in regard to supervising the child or children so exposed to infection.

*(b) Non-pulmonary tuberculosis.*

There were 651 new cases diagnosed by the tuberculosis officers as suffering from non-pulmonary tuberculosis in the following forms :—

Bones, joints and spine	...	...	159	} 651
Abdomen	...	...	96	
Other organs	...	...	44	
Peripheral glands	...	...	325	
Skin	...	...	27	

In 1932 the number of applications from non-pulmonary cases was 690.

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## XI.—THE TREATMENT OF PULMONARY TUBERCULOSIS IN RESIDENTIAL INSTITUTIONS.

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The most expensive part of a tuberculosis scheme is the cost of maintaining patients in sanatoria or hospitals. The practice of the tuberculosis medical staff has always been conservative in regard to diagnosis, particularly in children, and every opportunity has been taken to adopt up-to-date methods of diagnosis. For this purpose the County Council have allowed their senior medical staff to attend post-graduate courses and to undertake research.

A very thorough examination at the dispensary, and especially the use there of a good x-ray plant ensures that only cases with definite tuberculosis are taken on the register and afforded treatment. This saves a considerable amount of public money by reducing the number of beds required for the treatment of patients.

As regards pulmonary adults, should tuberculosis institutions treat separately or on the same site the observation, the early, the chronic, and the acute case? The problem of dealing with the tuberculous, and more particularly the chronic tuberculous, patient cannot be decided on the basis of a separation of what may be called good and bad cases. The superintendent of an isolated sanatorium is always wishing to have his institution cleared of chronic and advanced cases. While very understandable, this does not help in the prevention and treatment of tuberculosis as a whole. Experience has shown that, by the use of x-rays and minor collapse therapy in tuberculosis institutions—not too big, situated near the patients' homes, superintended or attended by the tuberculosis officer, and taking all types of pulmonary cases—prevention and treatment go hand in hand, and the title given to the institution—hospital or sanatorium—is of little importance.

I believe then that tuberculosis institutions for pulmonary disease should treat on one and the same site the good, the bad, and the intermediate case, and treatment will often have to be of long duration.

Arrangements for the institutional treatment of pulmonary children (up to 15 years of age) require careful consideration, and such patients should be divided into three categories and dealt with in institutions as follows :—

- Class 1. Children with positive sputum (indicating the adult type of pulmonary tuberculosis): should be provided with separate accommodation at institutions for adult pulmonary cases.
- Class 2. Children with negative or no sputum: should be treated at sanatorium schools.
- Class 3. Children with indefinite symptoms, generally known as the pre-tuberculous type: should attend open-air schools provided by the local education authority.

In regard to children, on pages 14—16 I report on the occurrence of pulmonary tuberculosis in relation to sanatorium accommodation, and give figures showing that, as the result of the conservative diagnosis of pulmonary tuberculosis in children, it had only been necessary to provide relatively few sanatorium beds in Lancashire for such children, with the consequent saving of public money.

With regard to adults suspected to be suffering from pulmonary tuberculosis, a similar conservative attitude has been adopted, as may be noted from the proportion (37·9 per cent.) of pulmonary cases on the register classified as T.B. minus. In contrast six large counties, with a population in the region of a million, show an average percentage of 48·6 T.B. minus cases; for the whole of England, the proportion was 54·6.

A further factor seriously affecting the number of beds required is the duration of treatment allowed to a patient. Here again every case has to be carefully weighed on its merits, but generally the following principles have been adopted:—

(a) Patients who are responding to institutional treatment are given a prolonged stay (6 months and over) so long as there is a likelihood of the disease becoming quiescent. To return such cases to their homes and to work before attaining quiescence is uneconomical because of the danger of the patient breaking down and all the good of institutional treatment being wasted.

(b) Patients, particularly the young adult group (aged 15-25), who have been given special forms of treatment (*e.g.*, artificial pneumothorax, phrenicectomy, thoracoplasty, sanocrysin) are allowed a sufficient stay (say, up to 6 months) to show progress from their treatment and are retained up to 12 months or more if their condition warrants it; cases treated by artificial pneumothorax attend at the dispensaries for a continuation of their treatment.

(c) Patients whose sputum has never been positive and who are not likely to make further progress or to require special treatment are allowed to return home at the end of two or three months' treatment. Many sputum examinations are made in this type of case and the usual practice is to make three tests of consecutive daily specimens.

(d) Patients with positive sputum who are not likely to make further progress and whose home conditions are reasonably satisfactory are allowed to return home at the end of two or three months' treatment.

The tuberculosis officers when making recommendations for institutional treatment bear in mind the following questions: (1) Is



institutional treatment required to improve the patient's health? (2) Is institutional treatment desirable to secure nursing care which cannot be otherwise obtained at home? (3) Is institutional treatment necessary to prevent the spread of infection?

All the patients in sanatoria and hospitals receive the benefit of and training in hygiene which is advantageous to themselves and a protection to others when they return home.

#### IMMEDIATE RESULTS OF INSTITUTIONAL TREATMENT.

The following Table 17 summarises the *immediate* results of treatment of patients discharged in 1933 from sanatoria and pulmonary hospitals :—

Classification on admission on to the institution.	Condition at time of discharge.	Duration of residential treatment in the institution.												Total patients dis- charged.		
		Under 3 months.			3—6 months			6—12 months			More than 12 months.					
		M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	No.	%	
T.B. minus.	Quiescent ... ..	11	6	1	21	11	7	7	19	9	4	4	13	113	41·7	
	Improved ... ..	23	15	6	27	17	5	8	9	2	1	1	—	114	42·1	
	No material improvement	12	6	—	4	—	—	—	1	1	—	1	1	26	9·6	
	Died ... ..	5	6	—	2	1	1	1	2	—	—	—	—	18	6·6	
T.B. plus 1 (early)	Quiescent ... ..	1	—	—	7	5	—	12	9	—	2	2	—	38	31·9	
	Improved ... ..	2	5	—	6	7	—	9	14	—	2	2	—	47	39·5	
	No material improvement	2	2	—	5	—	—	4	3	—	2	3	—	21	17·6	
	Died ... ..	3	6	—	—	—	—	2	1	—	—	1	—	13	10·9	
T.B. plus 2 (inter- mediate)	Quiescent ... ..	1	2	—	12	8	—	12	13	1	7	4	1	61	8·6	
	Improved ... ..	27	32	1	59	73	—	69	46	—	31	23	3	364	51·6	
	No material improvement	37	26	2	27	20	—	15	14	—	10	9	1	161	22·8	
	Died ... ..	33	25	—	23	13	—	8	5	—	11	1	1	120	16·9	
T.B. plus 3 (ad- vanced)	Quiescent ... ..	1	—	—	1	1	—	4	1	—	2	1	—	11	5·8	
	Improved ... ..	3	7	—	13	13	—	10	7	—	4	1	1	59	31·4	
	No material improvement	11	11	—	10	6	—	5	6	—	—	3	—	52	27·6	
	Died ... ..	24	14	—	8	9	1	4	4	—	1	1	—	66	35·1	
Total ... ..		196	163	10	225	184	14	170	154	13	77	57	21	1284	—	
Diagnosis on discharge from institution.								Stay under 4 weeks.			Stay over 4 weeks.					
	Tuberculous ... ..								6	1	—	11	7	2	27	48·2
	Non-tuberculous ... ..								2	—	—	10	8	6	26	46·4
	Doubtful ... ..								—	1	—	1	1	—	3	5·4
GRAND TOTAL ... ..														1,340		

The table illustrates that the best results are achieved when institutional treatment is given before the sputum becomes positive—the more advanced the disease the less satisfactory progressively are the results.

In each of the five large dispensary areas, there is a pulmonary hospital in the charge of the consultant tuberculosis officer, an arrangement of the highest importance because patients come to these hospitals from the area administered by the tuberculosis officer, who is, therefore, conversant with the home conditions. Further, it is of great advantage to the tuberculosis officer, because he can himself apply certain forms of treatment and carry out valuable clinical and research work.

A number of patients are also accommodated in the pulmonary hospitals belonging to other bodies situated in or near the area. Arrangements have been made (with minor exceptions) for the tuberculosis officers to visit periodically the pulmonary hospitals in their area and confer with the medical superintendents on the following matters:—(1) The question of extension of patients' treatment or their return home, having special regard to the home conditions which are known to the tuberculosis officer; (2) the question as to patients' future treatment; (3) applications from patients for transfer to other institutions, or for their discharge home, and to settle, where possible, any complaints by patients which may arise.

The foregoing working arrangements have enabled the highly infectious cases with unsatisfactory home conditions to remain at the pulmonary hospitals for long periods for the purpose of isolation, and it is always possible for patients who have made good progress and are capable of light work to be transferred to sanatoria for the continuation of their treatment.

Brief particulars are given in the following Table 18 of the pulmonary hospitals available for the treatment of patients:—

Name of hospital.	1933 : Number of patients—		
	Admitted.	Discharged.	Died.
(a) County Council Institutions :			
Chadderton, near Oldham ... ..	80	57	26
Heath Charnock, near Chorley ... ..	76	59	15
Peel Hall, Little Hulton ... ..	117	101	15
Rufford, near Ormskirk ... ..	134	120	16
Withnell, near Chorley ... ..	71	60	11
*Wolstenholme, Norden ... ..	54	22	21
(b) Institutions administered by other bodies :			
Burnley ... ..	27	33	7
Eccleston Hall, near St. Helens ... ..	13	8	3
Hefferston Grange, Cheshire ... ..	24	17	12
Pemberton, Wigan ... ..	12	8	5
Other institutions ... ..	1	1	—
TOTAL ... ..	609	486	131

\*The Wolstenholme Pulmonary Hospital was transferred from the Rochdale Corporation to the County Council on 1st July, 1933.



By the Public Health Act of 1925, a county council or a local sanitary authority now have power to secure the compulsory isolation of infectious cases on the order of the magistrates. So far it has only been necessary for one patient to be so dealt with.

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## XII.—AFTER-HISTORIES OF ADULT PATIENTS SUFFERING FROM PULMONARY TUBERCULOSIS.

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This year I have had tabulated the after-histories of the adult pulmonary patients who came on the dispensary registers during the years 1920, 1925, and 1930. These three years have been taken as sample years at five-year intervals. They are sufficient, in my opinion, to indicate the results of treatment; to include the intervening years would involve a large amount of work and the changes as between one year and another would be very gradual indeed.

During the period 1930—1934 the amount of surgical treatment (artificial pneumothorax, phrenicectomy, and thoracoplasty) of pulmonary tuberculosis has progressively increased; 1930 is the first year which shows a really considerable number (over a hundred and fifty) of artificial pneumothorax cases. The value of surgical treatment should, of course, show itself, if favourable, by a larger proportion of patients remaining alive. While it is certainly true that many patients if they had not received collapse therapy would soon have died, the number receiving such treatment in 1930 is only a small proportion of the total patients treated by other methods.

The information is contained in Table 19 following. No division has been made in the table as between those patients who had institutional treatment and those who had not. In 1924 and several previous years, I sought to contrast results of treatment of the two groups, but nowadays it is the exception for a patient not to enter a sanatorium or pulmonary hospital, and consequently it would be extraordinarily difficult to attempt to match the sanatorium and the non-sanatorium cases as regards the extent of the disease and their home circumstances, even though it be possible to match them as regards age, sex, and stage of disease.

To keep the table as simple as possible, the position of the patients has been given as on the 31st December, 1933, the criterion being whether they had recovered (see definition in Chapter III), were still living, or were known to be dead. I have not attempted to divide the living into the different groups of disease arrested, quiescent, and active, or working capacity, as this additional information would split the figures into small numbers.



The following Table 19 has been introduced, therefore, to show the position at the end of 1933 of adult pulmonary patients who came on the dispensary registers during the years 1920, 1925, and 1930 :—

	T.B. minus		T.B. plus 1		T.B. plus 2		T.B. plus 3		Total.
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
(a) Patients who came on the dispensary registers during the year <b>1920.</b>									
*Net number of patients dealt with ... ..	144	119	92	38	211	138	143	114	999
Number of above patients who had recovered or were alive at the end of:									
1920 (after 6 months) ...	118	104	86	36	164	121	44	53	726
1921 (after 1½ years) ...	100	92	75	25	99	76	17	22	506
1922 (after 2½ years) ...	94	84	59	20	63	53	5	7	385
1923 (after 3½ years) ...	92	82	50	18	43	35	3	7	330
Percentage ... ..	63·8	68·9	54·3	47·3	20·3	25·3	2·0	6·1	33·0
1928 (after 8½ years) ...	86	79	38	12	17	18	—	1	251
Percentage ... ..	59·7	66·3	41·3	31·5	8·0	13·0	—	0·8	25·1
†1933 (after 13½ years) ...	86 (82)	78 (76)	32 (24)	12 (9)	15 (6)	13 (7)	—	1	237 (204)
Percentage ... ..	59·7	65·5	34·7	31·5	7·1	9·4	—	0·8	23·7
(b) Patients who came on the dispensary registers during the year <b>1925.</b>									
*Net number of patients dealt with ... ..	99	113	62	55	236	195	144	110	1,014
Number of above patients who had recovered or were alive at the end of:									
1925 (after 6 months) ...	81	90	58	52	184	158	52	35	710
1926 (after 1½ years) ...	69	72	47	45	102	103	17	12	467
1927 (after 2½ years) ...	62	67	45	37	77	70	9	8	375
1928 (after 3½ years) ...	60	66	43	29	58	56	5	8	325
Percentage ... ..	60·6	58·4	69·3	52·7	24·5	28·7	3·4	7·2	32·0
†1933 (after 8½ years) ...	57 (44)	61 (55)	24 (6)	23 (6)	21 (3)	22 (5)	1	2	211 (119)
Percentage ... ..	57·5	53·9	38·7	41·8	8·8	11·2	0·6	1·8	20·8
(c) Patients who came on the dispensary registers during the year <b>1930.</b>									
*Net number of patients dealt with ... ..	105	96	45	39	273	199	118	87	962
Number of above patients who had recovered or were alive at the end of:									
1930 (after 6 months) ...	84	79	42	37	200	150	56	32	680
1931 (after 1½ years) ...	73	70	37	32	143	102	26	15	498
1932 (after 2½ years) ...	68	67	35	26	109	79	17	13	414
1933 (after 3½ years) ...	67	64	30	23	92	66	10	10	362
Percentage ... ..	63·8	66·6	66·6	58·9	33·6	33·1	8·4	11·4	37·6

\*Net number arrived at after deducting patients left County, untraced, ceased treatment for other than medical reasons, and died from other than tuberculosis.

†Includes patients who, up to the end of **1933**, had been written off the register as recovered, the small figures in brackets denoting the number of such recovered cases.

N.B.—The patients coming on the registers in **1920**, **1925**, and **1930** are spread over the whole of these years, and for the sake of calculating the duration of supervision, their year of coming on the register has been averaged at 6 months.

#### COMMENT.

It is possible in Table 19 to compare results of treatment after 8½ years' supervision by the dispensary staff of the 1920 and 1925 patients: the percentages do not disclose any improvement in 1925 over 1920. It is true that during this period few patients received collapse therapy.

Another comparison, however, can be made of patients who had been on the dispensary registers for an average period of  $3\frac{1}{2}$  years. Here, 1930 shows a small but definite improvement over corresponding figures for 1920 and 1925.

Although this Chapter deals entirely with an attempt to assess the results of treatment of pulmonary cases, all the efforts made to *prevent* the spread of the disease must on no account be overlooked. The results of these preventive measures are more encouraging because they have brought about a substantial reduction in the number of new cases reported (see Chapter I).

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# XIII.—THE TREATMENT OF NON-PULMONARY TUBERCULOSIS.

## IMMEDIATE RESULTS OF INSTITUTIONAL TREATMENT AT GENERAL AND SPECIAL HOSPITALS.

A summary of the condition on discharge of patients treated during 1933 in approved general and special hospitals is given in the following Table 20 :—

Classification on admission to the institution.	Condition at time of discharge.	Duration of residential treatment in the institution.												Total Patients Discharged		
		Under 3 months.			3—6 months			6—12 months			More than 12 months					
		M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	No.	%	
Bones and joints.	Quiescent ... ..	8	12	12	7	5	10	8	5	16	6	4	26	119	43·7	
	Improved ... ..	26	22	3	5	5	4	6	7	2	7	4	28	119	43·7	
	No material improvement ...	4	6	7	2	1	—	1	—	—	—	—	2	23	8·5	
	Died in institution ... ..	2	1	1	2	—	—	1	3	—	—	—	1	11	4·0	
Abdominal.	Quiescent ... ..	3	4	6	1	1	7	—	—	5	—	—	2	29	39·2	
	Improved ... ..	4	10	6	2	1	2	—	3	—	—	1	1	30	40·5	
	No material improvement ...	2	—	7	—	1	1	—	—	1	—	—	—	12	16·2	
	Died in institution ... ..	1	1	1	—	—	—	—	—	—	—	—	—	3	4·0	
Other organs	Quiescent ... ..	3	2	—	—	—	3	—	—	—	—	—	1	9	16·1	
	Improved ... ..	15	13	—	4	1	—	1	—	1	—	—	2	37	66·1	
	No material improvement ...	2	3	—	—	—	—	—	—	—	—	—	—	5	8·9	
	Died in institution ... ..	—	2	3	—	—	—	—	—	—	—	—	—	5	8·9	
Peripheral glands.	Quiescent ... ..	3	6	6	1	1	8	—	1	11	—	—	1	38	40·4	
	Improved ... ..	11	19	14	—	1	1	—	1	1	—	1	2	51	54·2	
	No material improvement ...	1	3	—	—	—	—	—	—	—	—	—	—	4	4·2	
	Died in institution ... ..	—	1	—	—	—	—	—	—	—	—	—	—	1	1·1	
Total ... ..		85	105	66	24	17	36	17	20	37	13	10	66	496	—	
Diagnosis on discharge from observation.								Stay under 4 weeks.			Stay over 4 weeks.					
	Tuberculous ... ..								2	1	4	3	7	20	37	52·9
	Non-tuberculous ... ..								4	4	3	2	3	10	26	37·1
	Doubtful ... ..								1	—	2	2	—	—	5	7·1
	Died... ..								—	—	2*	—	—	—	2	2·9

Grand Total 566

\* Diagnosis :—(1) Broncho-pneumonia ; (2) Streptococcal empyema.

# XIV.—AFTER-HISTORIES OF PATIENTS SUFFERING FROM NON-PULMONARY TUBERCULOSIS.

The after-histories of patients suffering from non-pulmonary tuberculosis were last published in 1929. To save the large amount of work which would be involved by obtaining the after-histories of patients who applied in each year since 1920, I have decided to give the results for patients who applied in the years 1920, 1925, and 1930. These sample years will give a good enough indication of the progress of treatment as it is found that relatively little difference occurs in the results of treatment in consecutive years.

All the non-pulmonary patients have been included whether they had institutional treatment, artificial light treatment at the dispensaries, or remained at home.

The following table, therefore, gives the after-histories as at the end of 1933 of the non-pulmonary patients, who are classified according to the year of application, part affected, and whether adults or children :—

TABLE 21. AFTER-HISTORIES OF PATIENTS SUFFERING FROM  
NON-PULMONARY TUBERCULOSIS.

(a) *Patients who came on the dispensary register during 1920.*

Classification : Part affected.	Adults or Children (at time of commencing treatment).	Net Number of Cases*	Position at the end of 1933, i.e., after 13½ years.							
			Recovered.		Arrested or Quiescent.		Disease Active.		Died from Tub.	
			Num- ber.	%	Num- ber.	%	Num- ber.	%	Num- ber.	%
Bones and joints ...	Adults	82	53	64.6	1	1.2	3	3.6	25	30.5
	Children	70	51	72.8	4	5.7	2	2.8	13	18.6
Abdominal ...	Adults	11	5	45.4	—	—	—	—	6	54.5
	Children	26	19	73.1	—	—	—	—	7	26.9
Other organs ...	Adults	6	2	33.3	—	—	—	—	4	66.7
	Children	1	—	—	—	—	1	100.0	—	—
Peripheral glands ...	Adults	60	54	90.0	—	—	—	—	6	10.0
	Children	93	89	95.7	—	—	1	1.1	3	3.2
Skin ...	Adults	64	34	53.1	9	14.1	18	28.1	3	4.7
	Children	26	18	69.2	5	19.2	3	11.5	—	—
TOTAL ...	Adults	223	148	66.4	10	4.5	21	9.4	44	19.7
	Children	216	177	81.9	9	4.2	7	3.2	23	10.6



(b) *Patients who came on the dispensary register during 1925.*

Classification : Part affected.	Adults or Children (at time of commencing treatment).	Net Number of Cases*	Position at the end of 1933, i.e., after 8½ years.							
			Recovered.		Arrested or Quiescent.		Disease Active.		Died from Tub.	
			Num- ber.	%	Num- ber.	%	Num- ber.	%	Num- ber.	%
Bones and joints ...	Adults	90	41	45.5	14	15.5	10	11.1	25	27.8
	Children	92	54	58.7	12	13.0	18	19.6	8	8.7
Abdominal ...	Adults	28	13	46.4	2	7.1	—	—	13	46.4
	Children	56	36	64.3	1	1.8	—	—	19	33.9
Other organs ...	Adults	15	11	73.3	—	—	—	—	4	26.7
	Children	4	—	—	1	25.0	—	—	3	75.0
Peripheral glands ...	Adults	98	89	90.8	4	4.1	3	3.1	2	2.0
	Children	178	164	92.1	10	5.6	2	1.1	2	1.1
Skin ...	Adults	19	11	57.9	2	10.5	6	31.6	—	—
	Children	23	13	56.5	5	21.7	5	21.7	—	—
TOTAL ...	Adults	250	165	66.0	22	8.8	19	7.6	44	17.6
	Children	353	267	75.6	29	8.2	25	7.1	32	9.1

(c) *Patients who came on the dispensary register during 1930.*

Classification : Part affected.	Adults or Children (at time of commencing treatment).	Net Number of Cases*	Position at the end of 1933, i.e., after 3½ years.							
			Recovered.		Arrested or Quiescent.		Disease Active.		Died from Tub.	
			Num- ber.	%	Num- ber.	%	Num- ber.	%	Num- ber.	%
Bones and joints ...	Adults	88	6	6.8	53	60.2	14	15.9	15	17.0
	Children	64	4	6.2	39	60.9	13	20.3	8	12.5
Abdominal ...	Adults	28	3	10.7	14	50.0	2	7.1	9	32.1
	Children	44	7	15.9	26	59.1	3	6.8	8	18.2
Other organs ...	Adults	29	4	13.8	10	34.5	7	24.1	8	27.6
	Children	9	1	11.1	1	11.1	1	11.1	6	66.7
Peripheral glands ...	Adults	116	23	19.8	80	68.9	10	8.6	3	2.6
	Children	235	42	17.9	172	73.2	17	7.2	4	1.7
Skin ...	Adults	41	2	4.9	23	56.1	15	36.6	1	2.4
	Children	15	1	6.7	8	53.3	6	40.0	—	—
TOTAL ...	Adults	302	38	12.6	180	59.6	48	15.9	36	11.9
	Children	367	55	14.9	246	67.0	40	10.9	26	7.1

\*Net number arrived at after deducting patients left County, untraced, ceased treatment for other than medical reasons, died from other than tuberculosis, and transferred to pulmonary.

In considering the table it should be noted that non-pulmonary cases can only be written off the register as recovered after three or more years' arrest of the disease. Consequently, for patients commencing treatment in 1930 barely enough time has elapsed to allow a large number of them being written off as recovered, but the majority of the patients appear in the column "disease arrested or quiescent." Thus, a truer picture can be obtained by adding together the columns for "recovered" and "arrested or quiescent."

## COMMENT.

Table 21 shows throughout the three sections (a), (b), and (c) that there are between 70 and 74 per cent. of the adults and 81 and 86 per cent. of the children recovered from their non-pulmonary condition or arrived at a stage with the disease arrested or quiescent; these percentages are slightly better than those reported in 1929. So large a proportion, averaging over three-quarters, of the adults and children restored to health is a satisfactory feature of the treatment of non-pulmonary tuberculosis.

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## XV.—TREATMENT OF TUBERCULOSIS BY ARTIFICIAL LIGHT.

### PRESENT POSITION OF THE COUNTY SCHEME.

Commencing with two experimental light centres in 1925, the County scheme has been extended, and now thirteen centres have been opened at County tuberculosis dispensaries. The names of the light centres and the description of the equipment were given in the 1929 report.

The treatment of the patients has been carried out under the direct supervision of the consultant tuberculosis officer of each dispensary area and by the medical and nursing staff under him.

### RESULTS OF TREATMENT.

Tables showing the results of treatment at each light centre together with a report by the tuberculosis officer on the cases treated and the methods used are included in Chapters XVIII. to XXV. The tables in question have been summarised in the following form which represents the work done at the thirteen centres in the County during the year 1933 :—

TABLE 22.

Form of tuberculosis or part of body affected.	Number of cases on treatment on 1-1-33	Number of cases commencing treatment in 1933.	Condition of patients whose treatment concluded in 1933				Ceased treatment for other reasons.*	Still under treatment at end of 1933.
			Quiescent and apparently well.‡	Improved.	Stationary.	Worse.		
Skin ... ..	166	60	36	10	3	—	29	148
Adenitis with abscess formation and skin involvement ...	101	123	109	16	2	—	22	75
Adenitis without softening ...	87	183	116	15	3	2	24	110
Bones, joints, and spine ...	26	21	10	2	4	—	11	20
Abdomen ... ..	12	18	12	—	—	—	3	15
Other non-pulmonary conditions	11	4	3	2	1	—	2	7
Pulmonary and non-pulmonary combined ... ..	3	2	1	1	—	—	2	1
Total for 1933 ... ..	406	411	287	46	13	2	93	376
For comparison, the total in 1932 was ... ..	374	466	284	24	17	7	102	406
	817 †							
	840 ‡							

\* Includes: (1) Patients who did not receive two months' treatment; (2) patients ceasing light treatment prematurely (*e.g.*, removals, unwilling or unable to continue); and (3) patients transferred to sanatoria or hospitals.

† Adults, 441; children, 376. ‡ Adults, 475; children, 365.

§ The term "quiescent and apparently well" has been chosen to express the condition of a lesion which has been healed by artificial light treatment. By direction of the Ministry of Health no case of non-pulmonary tuberculosis is written off the tuberculosis register as "recovered" until three years have elapsed without any signs or symptoms of active disease.

Artificial light has now been in general use in the County since 1928, and the following table has been prepared to show the condition of the patients on discharge from that form of treatment during the six years 1928-1933 :—

TABLE 23.

Form of tuberculosis or part of body affected.	Number of patients ceasing light treatment.	Condition of patients on concluding treatment during 1928-1933.				Ceased treatment for other reasons.*
		Quiescent and apparently well.‡	Improved.	Stationary.	Worse.	
Skin ... ..	480	248	50	12	4	166
Adenitis with abscess formation and skin involvement ... ..	846	638	47	14	—	147
Adenitis without softening ... ..	651	441	45	20	5	140
Bones, joints, and spine ... ..	270	112	23	21	2	112
Abdomen ... ..	127	79	5	6	2	35
Other non-pulmonary conditions ... ..	73	39	7	3	1	23
Lungs—sputum positive ... ..	14	—	—	5	5	4
sputum negative ... ..	5	1	—	—	1	3
Bronchial glands ... ..	11	5	2	1	—	3
Pleura ... ..	4	3	—	1	—	—
Pulmonary and non-pulmonary combined ... ..	19	4	2	—	1	12
Total ... ..	2,500	1,570	181	83	21	645

\* § For footnotes see Table 22.

Returning to the year 1933, 42 patients, who had ceased treatment in a previous year with the disease quiescent and apparently well, relapsed and returned for further treatment; the classification of these cases was as follows :—Skin, 8; adenitis with abscess formation and skin involvement, 14; adenitis without softening, 14; bones and joints, 3; abdomen, 1; abscess loin, 1; and Bazin's disease, 1.

In addition to the 817 active cases dealt with in Table 22, there were 18 non-pulmonary cases whose condition was quiescent on commencing light treatment. The object of treatment was to prevent a possible recurrence of active disease.

The results of treatment of cases of non-pulmonary tuberculosis in 1933 may be considered satisfactory, particularly for five groups of cases, namely: (i) Adenitis with abscess formation and skin involvement; (ii) adenitis without softening; (iii) abdomen; (iv) bones and joints; and (v) skin. Conditions (i) and (v) are usually refractory to other forms of treatment.

Of the total patients attending the light centres, 82 per cent. were able to continue their normal occupation during the course of treatment.

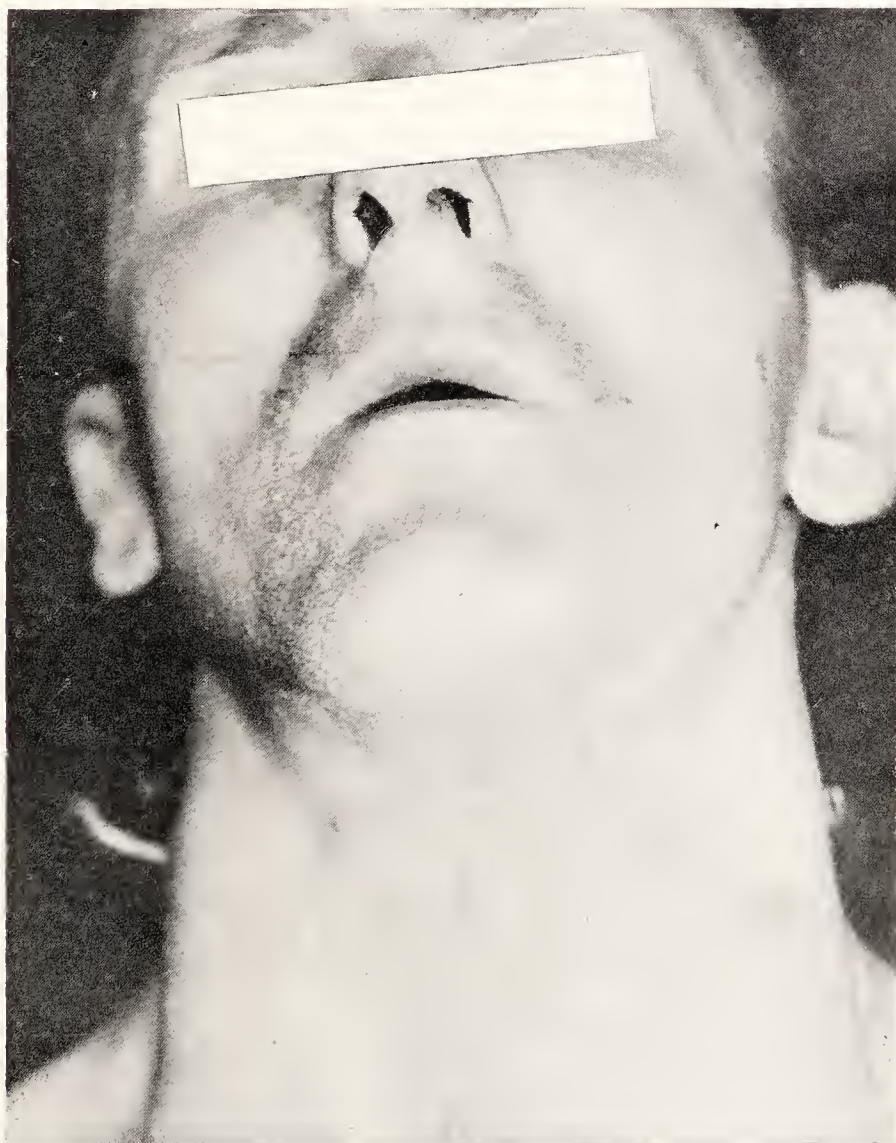
The average gain in weight of the 287 patients who became "quiescent and apparently well" was as follows :—Adults 3.01 lbs.; children 4.39 lbs.



ARTIFICIAL LIGHT TREATMENT AT DISPENSARIES.



A.L.I(a).—W.K., male, aged 33. Lupus. Duration of disease prior to light treatment 17 years. No previous treatment.



A.L.I(b).—Same patient. Photograph taken 2-5-33 after eight months' treatment with general carbon arc and plaster. Pigmentation slight. Weight gained 2 lbs.

[Photographs taken at Accrington Dispensary.]



ARTIFICIAL LIGHT TREATMENT AT DISPENSARIES (contd.).



A.L.2(a).—G.L., male, aged 16. Lupus of face since infancy. No previous treatment.



A.L.2(b).—Same patient. Photograph taken after six months' treatment with general carbon arc. Weight gained 8 lbs.

[Photographs taken at St. Helens Dispensary.]



The degree of pigmentation attained in these 287 patients was : Deep 44, medium 78, light 101, none 64.

#### AVERAGE DURATION OF TREATMENT.

The duration of treatment has varied widely according to the type of non-pulmonary disease. Taking several groups of cases in which the disease has become quiescent and apparently well the average duration is as given in the following Table 24 :—

Form of tuberculosis or part of body affected.	Number of cases (active on commencing light treatment) who became "quiescent and apparently well."	Average duration of light treatment.	<i>For comparison : Average duration of disease before commencing light treatment.</i>
		Months.	Months.
Skin ... ..	36	17·33	99·34
Adenitis with abscess formation and skin involvement ...	109	8·57	14·21
Adenitis without softening ...	116	6·92	14·83
Bones, joints, and spine ...	10	5·62	53·65
Abdomen... ..	12	11·02	14·95
Other non-pulmonary conditions	3	27·41	70·75

The frequency of attendance of patients depends on several factors, but at eleven of the centres the great majority of patients attend twice per week, and at the other centres thrice per week. Thirty-eight per cent. of the patients were assisted by the payment of railway, bus or tram fares to the light centre.

#### PHOTOGRAPHIC RECORDS.

In order to record the progress made by patients, photographs have been taken of a number of cases treated by light—at commencement, during the course of treatment, and on termination.

#### COST OF LIGHT TREATMENT.

The cost of artificial light treatment at the centres has averaged 5s. 1d. per patient per week (inclusive of standing charges and a proportion of staff salaries, etc.).

A separate article entitled "Actinothrapy at a Tuberculosis Dispensary," written by Dr. G. Jessel, the consultant tuberculosis officer for Dispensary Area No. 4, forms Chapter V. of this report.

## XVI.—THE DISPENSARY ORGANISATION.

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A tuberculosis dispensary should be the centre of activity, for a town or district, in regard to measures for the prevention of the disease, the expert examination and diagnosis of cases, together with the supervision, special treatment, and care of all known tuberculous persons.

For dispensary purposes, the Administrative County is divided into five large areas, average population 320,000, and three sub-areas. Each large area is in the charge of a consultant tuberculosis officer, and to help the consultants there are nine assistant tuberculosis officers, 33 tuberculosis health visitors, and clerical staff. In each dispensary area there is a chief dispensary at which is co-ordinated the whole of the work required in that particular area, and, in addition, branch dispensaries have been provided. The aim of the County Council has been to provide in each area a pulmonary hospital containing 50 to 55 beds for the diagnosis of observation cases and the treatment of intermediate and advanced cases of pulmonary tuberculosis near their homes, the consultant tuberculosis officer of the particular dispensary area acting as the visiting medical superintendent. The three sub-areas—Furness, Fylde and Wigan County—are in the charge respectively of the medical superintendents of the High Carley Sanatorium, the Elswick Sanatorium, and the Wroughtington Hospital. Thus, the dispensary side of the work is not divorced from the institutional side.

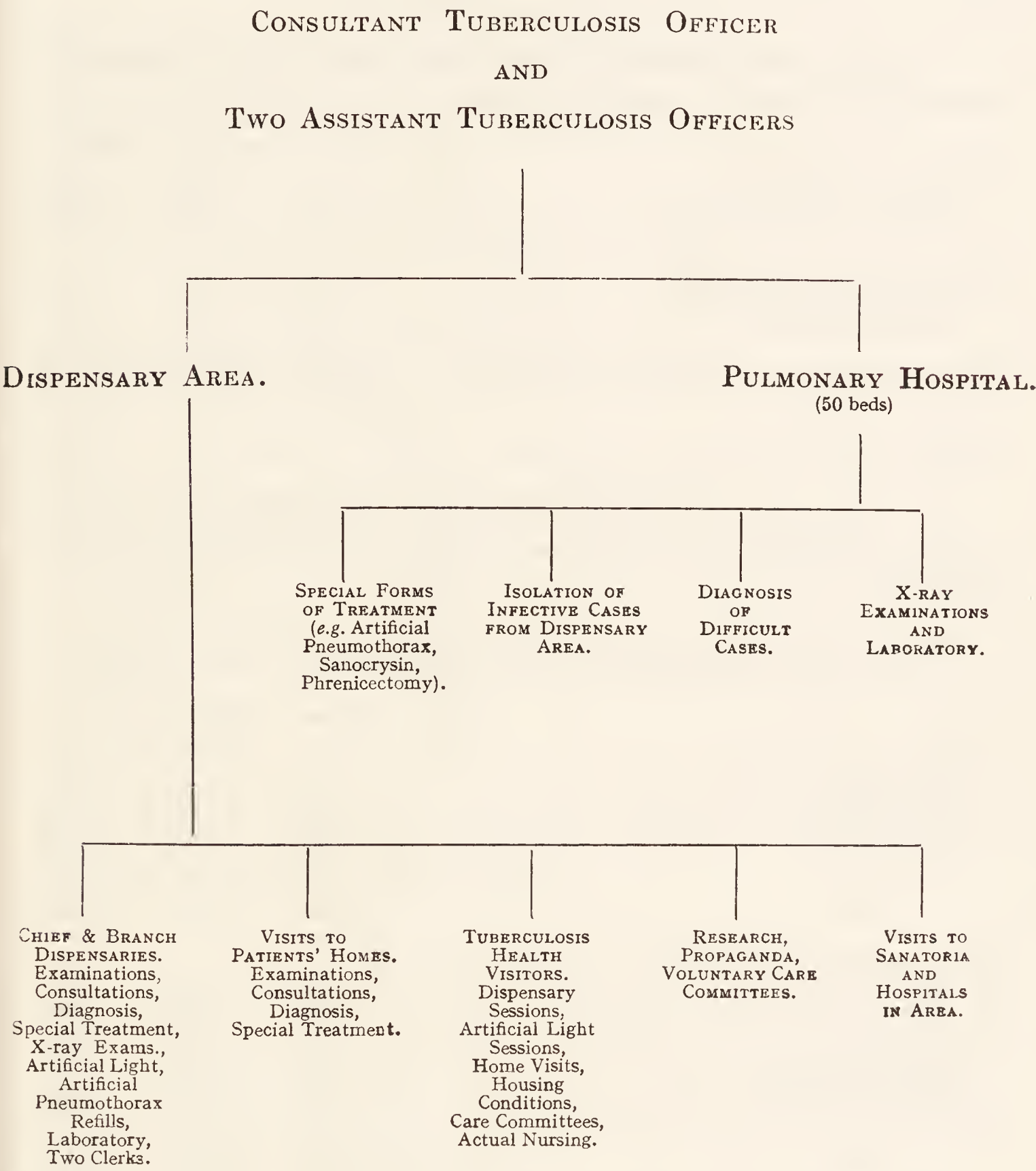
The duties of a consultant tuberculosis officer will, therefore, include in any week the holding of dispensary sessions for diagnosis and advice as to treatment; the visitation in consultation with the medical attendant of patients in their homes for diagnosis and advice as to treatment; the examination of patients undergoing artificial light treatment at the dispensary centre; the holding of sessions at the dispensary for x-ray examinations; the visitation of the pulmonary hospital on four or five days per week for routine and special treatment, and administration; the attendance at meetings of voluntary care committees; arrangement of work with the two assistant tuberculosis officers, the tuberculosis health visitors, and the clerical staff.

The dispensary organisation is better illustrated by the chart opposite.



THE DISPENSARY ORGANISATION.

The Administrative County is divided into five large dispensary areas (average population 320,000). The chart below illustrates the organisation and work of one of these dispensary areas :—



The work done through the dispensary organisation during the year 1933 is dealt with further in Chapter XVII.

## XVII.—SUMMARY OF WORK DONE THROUGH THE DISPENSARY ORGANISATION.

### CASES UNDER SUPERVISION.

On the 31st December, 1933, there were on the dispensary registers the following numbers of cases:—

					Males.	Females.	Total.
Pulmonary tuberculosis :							
Under 15 years of age	...	...	...	...	112	120	232
15 years and over	...	...	...	...	2,154	1,748	3,902
Non-pulmonary tuberculosis :							
Under 15 years of age	...	...	...	...	716	684	1,400
15 years and over	...	...	...	...	889	1,133	2,022
<b>TOTAL PATIENTS ON DISPENSARY REGISTERS</b>	...			...	<u>3,871</u>	<u>3,685</u>	<u>7,556</u>
Doubtful cases (diagnosis not determined)	...			...	...	...	27

On the estimated population of the Administrative County, namely, 1,802,730, the 7,556 cases represent an incidence of 4.19 per 1,000.

The medical classification\* of the 7,556 patients was as under:—

						Disease active.	Disease quiescent.	Total.
Pulmonary tuberculosis :								
T.B. minus	...	...	...	...	...	572	995	1,567
T.B. plus 1	...	...	...	...	...	324	280	604
T.B. plus 2	...	...	...	...	...	1,266	436	1,702
T.B. plus 3	...	...	...	...	...	218	43	261
Total	...	...	...	...	...	<u>2,380</u>	<u>1,754</u>	<u>4,134</u>
Non-pulmonary tuberculosis :								
Bones and joints	...	...	...	...	...	334	389	723
Spine	...	...	...	...	...	164	141	305
Abdomen	...	...	...	...	...	95	219	314
Other organs	...	...	...	...	...	65	79	144
Peripheral glands	...	...	...	...	...	393	1,148	1,541
Skin ...	...	...	...	...	...	230	165	395
Total	...	...	...	...	...	<u>1,281</u>	<u>2,141</u>	<u>3,422</u>
<b>TOTAL PULMONARY AND NON-PULMONARY</b>	...				...	<u>3,661</u>	<u>3,895</u>	<u>7,556</u>

\* Classification in accordance with Memorandum 37/T (Revised) issued by the Ministry of Health in October, 1930. The pulmonary cases are divided into : (a) "Class T.B. minus"—cases in which tubercle bacilli have never been demonstrated in the sputum, pleural fluid, fæces, etc. ; (b) "Class T.B. plus"—cases in which tubercle bacilli have at any time been found ; this class is further divided into Groups 1, 2, and 3, representing the early, intermediate, and advanced stages of the disease.



A further detailed analysis (including age-groups) of the number of tuberculous cases on the dispensary registers is given in Appendix III, from which the following proportions have been calculated :—

	Per 1,000 of child population (0 to 15).	Per 1,000 of adult population (15 and over).
(a) PULMONARY TUBERCULOSIS.		
Total number of cases of pulmonary tuberculosis per 1,000 of the population	2.29	
Number of <i>active</i> cases per 1,000 of the population	1.32	
Number of <i>quiescent</i> cases per 1,000 of the population	0.97	
Number of <i>T.B. plus</i> cases—children	0.05	
adults		1.80
Number of <i>T.B. minus</i> cases—children	0.54	
adults		1.96
Of the total cases of pulmonary tuberculosis 5.61 per cent. were children under 15 years of age.		
(b) NON-PULMONARY TUBERCULOSIS.		
Total number of cases of non-pulmonary tuberculosis per 1,000 of the population		1.89
Number of <i>active</i> cases—children	1.23	
adults		0.56
Number of <i>quiescent</i> cases—children	2.33	
adults		0.86
Number of cases, divided according to the part affected :—		
Bones, joints, and spine—children	0.97	
adults		0.45
Abdomen—children	0.35	
adults		0.12
Peripheral glands—children	2.03	
adults		0.52
Skin—children	0.17	
adults		0.23
Other organs—children	0.03	
adults		0.09

The foregoing proportions show the main factors in the incidence of tuberculosis, and if other authorities published similar information valuable comparisons could be made.

## X-RAY EXAMINATIONS.

X-ray plants for the use of consultant tuberculosis officers are provided at the chief dispensaries of the five large areas. In the sub-areas, namely, Furness, Fylde, and Wigan County, the x-ray work is carried out at the respective institutions of which the consultant tuberculosis officer is also medical superintendent—High Carley, Elswick and Wrightington.

A new plant was installed at the Rufford Pulmonary Hospital in July, 1933.

The following statement shows the x-ray work done at County dispensaries, sanatoria and hospitals during 1933 compared with several previous years :—

TABLE 25.

	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.
Dispensary patients :								
Skiagrams ...	3,625	4,506	5,519	5,364	5,676	6,045	6,336	6,457
Screenings ...	815	733	672	519	854	1,417	2,163	2,638
Institutional patients:								
Skiagrams ...	194	333	774	1,320	2,162	2,458	3,763	3,779
Screenings ...	157	284	470	840	2,012	2,988	3,418	4,147
Total ...	4,791	5,856	7,435	8,043	10,704	12,908	15,680	17,021

The greater amount of artificial pneumothorax treatment for which radiological control is necessary accounts mainly for the increasing number of x-ray examinations.

The policy of placing an apparatus in each dispensary area for use by the tuberculosis officer himself is, from experience, found to be the best method, because the tuberculosis officer, with his knowledge of the patient's history and clinical signs, is most fitted to make a correct interpretation of the skiagrams.

#### HOUSING.

The following table shows the housing conditions of all patients under treatment or supervision at the end of 1933. Whilst every effort is made to secure that infectious cases occupy a separate room, or at least a separate bed, no useful purpose is served by making the same insistence in regard to patients with the disease quiescent or arrested. The non-pulmonary cases are given separately, and only a very small number indeed may be considered infectious.

TABLE 26.—*Housing statistics of 7,556 County patients.*

		Patients occupying a separate bedroom.	Patients occupying a separate bed, but not a separate bedroom.	Patients not occupying a separate bed.
Number of pulmonary cases considered <i>infectious</i> .	{ Under 15 years 15 and over ...	7 1,252	8 528	3* 113*
Number of pulmonary cases considered <i>not infectious</i> .	{ Under 15 years 15 and over ...	52 902	92 430	70 677
Number of non-pulmonary cases	{ Under 15 years 15 and over ...	202 516	570 444	628 1,062
TOTAL ...	{ Under 15 years 15 and over ...	261 2,670	670 1,402	701 1,852

\* 29 of these 116 cases were isolated in sanatoria or pulmonary hospitals at the end of 1933.



It will be seen that 116 patients (including three children) suffering from pulmonary tuberculosis and considered to be infectious were not occupying a separate bed when at home at the time the census of the housing conditions was taken at the end of 1933. Of this number, 29 were away from home and isolated in pulmonary hospitals or sanatoria, leaving (from a total of 1,911 infectious cases) 87, or 4·5 per cent., infectious cases at home not occupying a separate bed. The percentage in 1932 was 4·8.

Appendix IV. of this report shows the housing conditions of the patients in each dispensary area.

#### EXAMINATION OF HOUSE CONTACTS.

By the systematic examination of house contacts, particularly among those of patients with positive sputum, many early or unsuspected cases of tuberculosis are detected. Owing to indifference or unwillingness, considerable difficulty—which, however, is gradually being overcome—is experienced in persuading contacts to come to the dispensary for examination, or even to submit themselves for examination at all.

By direction of the Ministry of Health, Memo. 37/T (Revised), cases are regarded as contacts only if the cause of their being examined is the fact that they have recently been, or still are, living in contact with some dispensary patient or other notified case; many persons suffering, or suspected to be suffering, from tuberculosis who attend at the dispensary of their own accord, or who are referred by a private medical practitioner, may give a history of previous contact with a known case of tuberculosis, but this does not bring them within the definition of “contacts.”

The following Table 27 shows the number of new contacts which have been examined in the Administrative County during 1933:—

	Diagnosed as tuberculous.		Doubtful.	Non-tuberculous.	Total.
	Pulmonary.	Non-pulmonary.			
Examined at home ...	1	1	1	93	96
Examined at dispensary	39	13	4	863	919
Total ...	40	14	5	956	1,015
	54				

Of the 1,015 new contacts examined during the year, 54 were ultimately diagnosed as definite cases of tuberculosis—pulmonary 40, and non-pulmonary 14. These cases are equal to 53·20 per 1,000 of contacts examined, as against the proportion of 4·19 tuberculous

persons, per 1,000 of the population, known to the dispensary staff in the County. Thus, the examination of selected contacts revealed many more tuberculous cases proportionately than would be found in the ordinary population.

It may be stated that of the 40 pulmonary cases, 25 per cent. were found to have a positive sputum.

#### EXAMINATION OF SPUTUM.

As an aid to diagnosis, arrangements are in existence for the examination, free of cost, of specimens of sputum sent by medical attendants. At each chief dispensary a small laboratory is installed for this work, whilst, in addition, an arrangement exists with the Director of the Public Health Laboratory, Manchester, for the examination of specimens including inoculation tests.

The following statement shows the results of the examinations made at the dispensary laboratories in 1933, compared with the previous year :—

			1932.	1933.
Positive ( <i>i.e.</i> , tubercle bacilli present) ...	...	...	1,400	1,719
Negative ( <i>i.e.</i> , tubercle bacilli not found) ...	...	...	5,633	5,958
			<hr/>	<hr/>
Total ...	...	...	7,033	7,677
			<hr/>	<hr/>

In addition to the 7,677 examinations made at the dispensary laboratories, 41 specimens were examined during 1933 at the Public Health Laboratory, Manchester, with the following results :—Positive 4, negative 37.

#### TUBERCULOSIS OFFICERS' VISITS TO SANATORIA AND HOSPITALS.

Periodical visits (mostly monthly) have continued to be paid by one or other of the consultant tuberculosis officers to the majority of the pulmonary hospitals, non-County sanatoria, and special hospitals treating County patients. These visits are of mutual help, inasmuch as they keep in touch the medical superintendent and the tuberculosis officer, who are able to confer on the patients' future treatment, the home circumstances, the provisions of the County scheme, and so on.

The following is the rota of visits for 1934 :—

Dr. G. H. Leigh	Heath Charnock Pulmonary Hospital, and Warwickshire Orthopaedic Hospital.
Dr. B. MacPhee	Eastby and Halifax Sanatoria.
Dr. G. Fletcher	Aitken Sanatorium, East Lancashire Tuberculosis Colony, and Chadderton Pulmonary Hospital.
Dr. G. Jessel	Wilkinson Sanatorium, Liverpool Open-air Hospital for Children, Leasowe, and Royal Liverpool Children's Hospital, Heswall and Thingwall Branches.
Dr. C. W. Laird	Eccleston Hall and Hefferston Grange Pulmonary Hospitals, and Robert Jones and Agnes Hunt Orthopaedic Hospital, Oswestry.
Dr. G. B. Charnock	Meathop Sanatorium.
Dr. E. H. A. Pask	Pemberton Pulmonary Hospital.



### PROVISION OF SPECIAL NOURISHMENT.

Special nourishment is granted to tuberculous persons on the following conditions, which have been approved by the Ministry of Health :—

- (1) That special nourishment be in no case ordered for a period of more than three months, and if in any case a continuance of the treatment is considered from a medical point of view desirable, the Central Tuberculosis Officer to report the case specially to the County Tuberculosis Committee.
- (2) That special nourishment be granted to persons who are waiting for admission to sanatoria or hospitals, or have returned therefrom, when it is thought to be medically essential as part of the cure of the disease.
- (3) That special nourishment may be allowed to cases not included in the foregoing, provided that particulars of the cases are laid before the Tuberculosis Committee for consideration.
- (4) That each grant of special nourishment will only be allowed by the Tuberculosis Committee subject to the patient carrying out, in a satisfactory way, the medical treatment and such general hygienic measures as may be advised by the medical practitioner and tuberculosis officer.
- (5) That special nourishment be limited to orders for new milk and cream, unless on special report other nourishment be found desirable.
- (6) That the limit of expenditure be 7/- per week, unless an amount in excess of this sum is specially recommended on medical grounds by the Central Tuberculosis Officer and sanctioned by the Tuberculosis Committee.

During the year, 1,677 grants of special nourishment for varying periods were made to 781 individual patients as part of their medical treatment. The figures in 1932 were 1,335 grants to 708 patients.

### SPECIAL SURGICAL APPLIANCES.

During 1933 the following surgical appliances were supplied to patients on the recommendation of the tuberculosis officers :—

Abdominal belt, 1 ; ankle splint, 1 ; arch support, 1 ; artificial limbs, 5 ; crutches, 10 pairs ; elbow splint, 1 ; finger splints, 2 ; foot splint, 1 ; hand splints, 4 ; hip spicas, 3 ; hip splints, 8 ; hip support, 1 ; Jones' back supports, 2 ; knee splints, 2 ; leather boot, 1 ; leather collar, 1 ; leather spicas, 3 ; leg iron, 1 ; leg splint, 1 ; metatarsal support, 1 ; pattens, 6 ; ring caliper, 1 ; spica splint, 1 ; spinal brace, 1 ; spinal collar, 1 ; spinal cuirasse, 1 ; spinal frame, 1 ; spinal jackets, 2 ; spinal splints, 2 ; spinal supports, 46 ; surgical belt, 1 ; surgical boots, 51 ; Thomas' arm splint, 1 ; Thomas' walking splint, 1 ; walking caliper splints, 20.

### PROVISION OF BEDSTEADS, MATTRESSES, AND NURSING REQUISITES.

In each County dispensary area a small stock of bedsteads, mattresses (but not bedding), and nursing requisites belonging to the County Council is available for loan to necessitous patients undergoing home treatment.

The bedsteads and mattresses, which are held at the disposal of the consultant tuberculosis officers, have proved of valuable assistance in securing the better sleeping accommodation at home of persons with pulmonary tuberculosis considered to be infectious.

The table following shows the number of these articles owned by the County Council, and also the number of patients who have been granted the use of the articles :—

TABLE 28.

Articles.	Quantity owned by County Council, 31/12/33.	Number of patients to whom articles have been loaned during 1933.	Articles in possession of patients on 31/12/33.
Bedsteads ... ..	217	45	172
Mattresses ... ..	209	52	176
Mattress covers ... ..	141	26	115
Air beds ... ..	7	2	1
Air cushions ... ..	157	185	83
Air pillows ... ..	1	—	—
Air pumps ... ..	3	—	—
Bath chairs ... ..	8	4	3
Bed cradles ... ..	7	1	—
Bed pans ... ..	97	92	45
Bed rests ... ..	56	52	34
Bed slippers ... ..	73	10	11
Extension apparatus ... ..	16	—	—
Fracture boards ... ..	2	—	—
Ground sheets ... ..	30	2	10
Hot water bottles ... ..	5	—	—
Ice bags ... ..	1	1	—
Rest chairs ... ..	4	2	2
Rubber sheeting ... ..	16½ yds.	2	1 yd.
Rubber sheets ... ..	8	2	1
Spinal boxes ... ..	21	—	—
Spinal carriages ... ..	16	4	4
Sponge beds ... ..	1	3	—
Urinals... ..	99	40	39
Water beds ... ..	14	4	2

#### TUBERCULOUS EX-SERVICEMEN.

Of the 7,556 patients under supervision of the dispensary staff at the end of 1933, 153 were discharged sailors, soldiers or airmen whose disease was held by the Ministry of Pensions to be attributable to or aggravated by service in the Great War, a pension being granted for the disability. The number of these tuberculous pensioners is declining, falling from 1,017 at the end of 1922 to the figure of 153 mentioned above.

#### SLEEPING SHELTERS.

There were, at the end of the year, 45 shelters in use by patients at their homes.

The loan of sleeping shelters is made to suitable cases on the recommendation of the tuberculosis officer, after careful consideration of the following points : (1) The condition of the patient and his ability to use the shelter properly ; (2) the position of the shelter ; (3) the home



TABLE A.

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DISPENSARY ORGANISATION.

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AREAS, MEDICAL STAFF, NURSING STAFF,  
DISPENSARIES, AND TIMES OF DISPENSARY  
SESSIONS.

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OCTOBER, 1934.

LANCASHIRE COUNTY COUNCIL.

Table A.—List of Tuberculosis Dispensaries in use in October, 1934, and the Tuberculosis Officers for the Dispensary Areas.

Dispensary Area No.	SANITARY DISTRICTS.			Estimated Civilian Population 31/12/33.	MEDICAL STAFF October, 1934.	NURSING STAFF.	DISPENSARIES (Chief and Branch).	Days and Hours of DISPENSARY SESSIONS (Distinct from Home Visiting, attending Sanatoria, Hospitals and Care Committees, etc.).
1	Adlington Blackrod Carnforth Chorley (B.) Chorley (R.) Fulwood Garstang (R.), Part of, consisting of parishes of— Barnacre-with-Bonds Bilsborrow Bleasdale	Garstang (R.) cont. Cabus Catterall Cloughton Cleyley Forton Garstang Hollith Kirkland Myerscough Nateby Nether Wyresdale Winmarleigh	Horwich Lancaster (B.) Lancaster (R.) Leyland Longridge Lunesdale (R.) Morecambe & Heysham (B.) Preston (R.) Walton-le-Dale Withnell Acreage 296,167	244,578	Dr. G. H. Leigh, Tuberculosis Dispensary, 8 Middle Street, Lancaster. Assistant Tuberculosis Officer— Dr. F. C. S. Bradbury	Nurse L. Walker  Nurse F. D. Abbott Nurse G. M. Hunter  Nurse J. Skelcher	LANCASTER (Chief), 8 Middle Street (Tel. No. 568). (Artificial Light Installation).  CHORLEY (Branch), 34 St. Thomas's Road (Tel. No. 263). (X-ray Apparatus and Artificial Light Installation).  PRESTON (Branch), 12 Walton's Parade (Tel. No. 4868). (Artificial Light Installation).	Monday, 12 noon. Other days and evenings by appointment. Tuesday morning by appointment Thursday, 11 a.m. 2nd Tuesday evening of month by appointment. Wednesday, 11 a.m. Monday evening before 2nd Tues. of month by appointment.
	FURNESS SUB-AREA— Dalton-in-Furness Grange-over-Sands	Ulverston	Ulverston (R.) Acreage 140,558	38,355	Dr. G. Leggat, High Carley Sanatorium, near Ulverston (Tel. No. 110 Ulverston).	Nurse E. A. Duston	ULVERSTON, 69 Albion Place, Lightburn Avenue (Tel. No. 145). (Artificial Light Installation). (X-ray Apparatus at High Carley Sanatorium).	Tuesday, 10 a.m. Thursday, 10 a.m.
	FYLDE SUB-AREA— Fleetwood (B.) Fylde (R.) Garstang (R.), Part of, consisting of parishes of— Great Eccleston Hambleton	Garstang (R.) cont. Inskip-with-Sowerby Out Rawcliffe Pilling Stalmine-with-Stainall Upper Rawcliffe	Kirkham Lytham St. Annes (B.) Poulton-le-Fylde Preesall Thomton Cleveleys Acreage 74,275	91,222	Dr. G. B. Charnock, Elswick Sanatorium, near Kirkham. Assistant Tuberculosis Officer— Dr. W. Fettes (1½ days per week)	Nurse A. Tweedy	FLEETWOOD, 23 Poulton Road (Tel. No. 282). (Artificial Light Installation).  ELSWICK Sanatorium, near Kirkham (Tel. No. 22 Great Eccleston). (X-ray Apparatus).	Tuesday, 9 a.m.  Wednesday, 10 a.m.
2	Accrington (B.) Bacup (B.) Barrowford Blackburn (R.) Brierfield Burnley (R.) Church	Clayton-le-Moors Clitheroe (B.) Clitheroe (R.) Colne (B.) Darwen (B.) Great Harwood Haslingden (B.)	Nelson (B.) Oswaldtwistle Padiham Rawtenstall (B.) Rishton Trawden Turton Acreage 177,027	337,073	Dr. B. MacPhee, Tuberculosis Dispensary, High Lea, 108a Whalley Road, Accrington. Assistant Tuberculosis Officers— Dr. S. C. Adam Dr. W. Fettes (2 days per week)	Nurse L. F. Norwood Nurse E. Watterson  Nurse M. Duggan  Nurse A. Munro Nurse H. M. Alcock Nurse R. Lambert	ACCINGTON (Chief), High Lea, 108a Whalley Road (Tel. No. 2443). (X-ray Apparatus and Artificial Light Installation).  DARWEN (Branch), 20 Railway Road (Tel. No. 408).  NELSON (Branch), 64 Carr Road (Tel. No. 507). (Artificial Light Installation).  STACKSTEADS (Branch), Knott Hill House (Tel. No. 201 Bacup). (Artificial Light Installation).	Tuesday, 2 p.m. Wednesday, 2 p.m. 2nd Tuesday of month, 5-30 p.m.  Monday, 10 a.m.  Tuesday, 2 p.m. Friday by appointment. 1st Friday of month, 5-30 p.m. Monday, 2 p.m. 1st Monday of month, 5-30 p.m.
3	Ashton-under-Lyne (B.) Audensbaw Chadderton Crompton Denton Droylsden Failsworth Heywood (B.)	Lees Limehurst (R.) Littleborough Middleton (B.) Milnrow Mossley (B.) Prestwich Radcliffe	Ramsbottom Royton Tottington Wardle Whitefield Whitworth Acreage 81,619	365,790	Dr. G. Fletcher, Tuberculosis Dispensary, Boston House, Warrington Street, Ashton-under-Lyne. Assistant Tuberculosis Officers— Dr. C. Berry Dr. J. L. Armour	Nurse C. Guilfooy Nurse H. Dewsnap Nurse M. Sherwen Nurse W. Swift  Nurse M. A. Potter  Nurse I. F. MacDonald Nurse M. A. Potter  Nurse A. Flynn Nurse M. Sherwen Nurse W. Swift  Nurse W. Swift Nurse H. Dewsnap	ASHTON-UNDER-LYNE (Chief), Boston House, Warrington Street (Tel. No. 1775). (X-ray Apparatus and Artificial Light Installation).  MIDDLETON (Branch), 71 Manchester Old Road (Tel. No. 2706).  OLDHAM (Branch), 25 Barker Street (Tel. No. 1671 Main).  RADCLIFFE (Branch), 41 Darbyshire Street (Tel. No. 2323). (Artificial Light Installation).  ROCHDALE (Branch), 168 Drake St. (Tel. No. 3892).	Monday, 10-30 a.m. x-ray exams. Tuesday, 2-30 p.m. Friday, 10 a.m. 1st Tuesday of month, 6-30 p.m. Friday, 2-30 p.m. 2nd Friday of month, 6-30 p.m.  Monday, 2-30 p.m. Wednesday, 10 a.m. 2nd Monday of month, 6-30 p.m. Wednesday, 2 p.m. 3rd Wed. of month, 6-30 p.m.  Thursday, 10-30 a.m. 2nd Thurs. of month, 6-30 p.m.
4	Atherton Eccles (B.) Farnworth Golborne Irlam	Kearsley Leigh (B.) Little Lever Stretford (B.) Swinton and Pendlebury	Tyldesley Urmston Westthroughton Worsley Acreage 58,190	359,220	Dr. G. Jessel, Tuberculosis Dispensary, 13 Church Street, Leigh. Assistant Tuberculosis Officers— Dr. A. B. Jamieson Dr. H. J. Villiers	Nurse I. M. Corfield Nurse M. B. Jones  Nurse M. Gibson Nurse H. M. Shakespeare  Nurse F. G. Smith  Nurse A. Dickinson  Nurse K. Blakemore	LEIGH (Chief), 13 Church Street (Tel. No. 258).  ECCLES (Branch), 28 and 30 Gilda Brook Road (Tel. No. 3533). (X-ray Apparatus and Artificial Light Installation).  FARNWORTH (Branch), 19-23 Darley Street (Tel. No. 63).  PENDLEBURY (Branch), 121 Station Road (Tel. No. 1895 Swinton).  STRETTFORD (Branch), 14 Derbyshire Lane (Tel. No. 2010 Longford).	Wednesday, 9-30 a.m. Friday, 9-30 a.m. 2nd Thurs. of month, 6-30 p.m. Tuesday, 2 p.m.: 2-30 p.m. for x-ray examinations. Thurs., 2-30 p.m. x-ray exams. Friday, 9-30 a.m. 1st Wed. of month, 6-30 p.m. Tuesday, 9-30 a.m. Friday, 2 p.m. 3rd Thurs. of month, 6-30 p.m. Monday, 2 p.m. Last Thurs. of month, 6-30 p.m.  Tuesday, 9-30 a.m. Thursday, 9-30 a.m. Last Monday of month, 6-30 p.m.
5	Formby Great Crosby Haydock Huyton-with-Roby Litherland	Newton-in-Makerfield Ormskirk Preseot Rainford Skelmersdale	Warrington (R.) Waterloo-with-Seaforth West Lancashire (R.) Whiston (R.) Widnes (B.) Acreage 169,704	257,212	Dr. C. W. Laird, Tuberculosis Dispensary, 7 Claremont Road, Seaforth. Assistant Tuberculosis Officers— Dr. C. H. Lilley Dr. W. Fettes (2 days per week)	Nurse A. Duncan Nurse M. J. McKeown  Nurse E. Walch Nurse L. Farquhar  Nurse M. J. Wilson	SEAFORTH (Chief), 7 Claremont Road (Tel. No. 688 Waterloo). (X-ray Apparatus).  ST. HELENS (Branch), 90 Hardshaw Street (Tel. No. 3916). (Artificial Light Installation).  WIDNES (Branch), Brendan House, Widnes Road (Tel. No. 156).	Monday, 3 to 4-30 p.m. Wed. afternoon by appointment. Thurs., 10-30 a.m. x-ray exams. Friday, 10 to 11-30 a.m. 3rd Thursday of month, 6 p.m. Tuesday, 3 to 4-30 p.m. Last Tues. of month, 6 to 7 p.m.
	WIGAN COUNTY SUB-AREA— Abram Ashton-in-Makerfield Aspull Billinge and Winstanley	Hindley Ince-in-Makerfield Orrell Standish-with-Langtree	Upholland Wigan (R.) Acreage, 40,950	109,280	Dr. E. H. Allon Pask, Wrightington Hospital, Appley Bridge, near Wigan (Tel. No. 38 Appley Bridge). Assistant Tuberculosis Officer— Dr. J. E. Wallace	Nurse E. Walters Nurse M. J. Evans	WIGAN, 3 Mesnes Park Terrace (Tel. No. 3172). (Artificial Light Installation). (X-ray Apparatus at Wrightington Hospital).	Monday, 10 to 11-30 a.m. Friday, 2 to 4 p.m. 1st Wed. of month, 6 to 7 p.m.  Monday, 9-30 a.m. Thursday, 9-30 a.m. 4th Thurs. of month, 6-30 p.m.
Total acreage of Admin. County				1,038,490	1,802,730			



conditions of the patient ; and (4) the means of communication with the nearest inhabited building in case of a sudden relapse.

The number of persons in 1933 who were allowed the use of the shelters was 58.

I have to thank medical officers of health and sanitary inspectors throughout the County for much valuable help in connection with the removal, disinfection, and re-erection of shelters used by County patients.

#### TUBERCULOSIS DISPENSARIES AND STAFF.

Table A, here inserted, shows the dispensary areas with the populations, present staffs, the addresses of the 24 dispensaries at present in use, and the days and times on which they are open.

#### EVENING SESSIONS AT DISPENSARIES.

As in previous years, evening sessions have been regularly held at most of the dispensaries for the convenience of patients who are at work during the day.

#### ARTIFICIAL LIGHT TREATMENT.

A report on the work done at the artificial light centres established at thirteen of the dispensaries is given in Chapter XV.

#### STATISTICS REQUIRED BY MINISTRY OF HEALTH.

By Memorandum 37/T (Revised), issued in October, 1930, the Ministry require certain information concerning the work done at tuberculosis dispensaries. These statistics, in the compulsory Table A of the Memorandum, are given in Appendix V. of this report.

#### RECOVERED CASES.

Dealt with in Chapter III, page 11.

#### SUMMARY OF DISPENSARY WORK DONE BY TUBERCULOSIS OFFICERS IN 1933, SHOWING COMPARISON WITH 1932.

VISITS BY TUBERCULOSIS OFFICERS TO PATIENTS' HOMES—	1932	1933
(a) Number of new persons (including new contacts) examined for diagnosis or expert opinion ... ..	1,250	1,257
(b) Number of re-examinations of "old" cases and "old" contacts—		
1. Respecting continued general supervision or dispensary treatment ... ..	3,947	4,009
2. Contacts respecting diagnosis ... ..	8	20
3. Other cases respecting diagnosis ... ..	156	193
4. For special forms of treatment or examinations resulting therefrom—		
Aspirations... ..	15	7
Adjustment of splints and surgical appliances ... ..	185	176
Lupus cases ... ..	20	42
Pneumothorax (refills) ... ..	1	1
Mantoux test ... ..	8	16
Other forms ... ..	—	1
	<hr/> 5,590	<hr/> 5,722

	1932	1933
<b>DISPENSARY ATTENDANCES BY PATIENTS—</b>		
(a) Number of new persons (including new contacts) examined for diagnosis or expert opinion ... ..	4,183	4,306
(b) Number of re-examinations of "old" cases and "old" contacts—		
1. Respecting continued general supervision or dispensary treatment ... ..	13,119	12,304
2. Contacts respecting diagnosis ... ..	364	817
3. Other cases respecting diagnosis ... ..	2,171	2,341
4. For special forms of treatment or examinations resulting therefrom—		
Artificial light (Lancaster, Chorley, Preston, Accrington, Nelson, Stacksteads, Ashton-under-Lyne, Radcliffe, Eccles, St. Helens, Wigan, Ulverston and Fleetwood Dispensaries) ... ..	33,060	29,981
Aspirations ... ..	172	116
Adjustment of splints and surgical appliances ... ..	890	860
Lupus cases ... ..	405	478
Pneumothorax (refills) ... ..	1,594	2,149
Tuberculin ... ..	238	195
Moogrol ... ..	—	246
Mantoux test ... ..	52	97
Other forms ... ..	67	72
	<u>56,315</u>	<u>53,462</u>
<b>X-RAY EXAMINATIONS MADE AT COUNTY DISPENSARIES AND INSTITUTIONS—</b>		
(a) Dispensary patients ... ..	8,499	9,095
(b) Institutional patients... ..	7,181	7,926
	<u>15,680</u>	<u>17,021</u>
<b>EXAMINATIONS OF SPUTUM AT COUNTY DISPENSARIES' ... ..</b>	<b>7,033</b>	<b>7,677</b>
<b>NUMBER OF RECOMMENDATIONS BY TUBERCULOSIS OFFICERS—</b>		
1. Sanatorium or hospital treatment ... ..	1,806	1,734
2. Dispensary treatment or general supervision ... ..	9,617	9,221
3. Provision of special nourishment ... ..	1,335	1,677
4. Provision of surgical appliances ... ..	147	170
5. Loan of shelters ... ..	16	14
6. Diagnosis not confirmed—		
(a) Notified cases ... ..	150	140
(b) Non-notified cases ... ..	8	4
7. Cases written off the register as refusing treatment ... ..	33	33
8. Pulmonary cases written off the register as recovered ... ..	280	415
9. Non-pulmonary cases written off the register as recovered	396	510
<b>CARE COMMITTEE MEETINGS ATTENDED BY—</b>		
(a) Tuberculosis officers ... ..	94	84
(b) Tuberculosis health visitors ... ..	150	160
<b>LECTURES OR ADDRESSES GIVEN ON TUBERCULOSIS ... ..</b>	<b>10</b>	<b>8</b>
<b>CONSULTATIONS WITH MEDICAL PRACTITIONERS—</b>		
Personal ... ..	773	667
Other ... ..	5,241	5,668
<b>VISITS BY TUBERCULOSIS OFFICERS TO SANATORIA, AND PULMONARY, SPECIAL, AND PUBLIC ASSISTANCE HOSPITALS</b>	<b>858</b>	<b>351</b>



	1932	1933
SPECIAL VISITS BY TUBERCULOSIS OFFICERS ( <i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.) ...	92	82
EXAMINATIONS OF ENTRANTS TO INDUSTRY UNDER SANDSTONE INDUSTRY (SILICOSIS) SCHEME, 1929 ... ..	37	27

## VISITS BY DISPENSARY NURSES TO PATIENTS' HOMES—

Routine visits ... ..	37,051	37,247
Actual nursing ... ..	795	627
Application of surgical dressings... ..	1,187	999
Adjustment of splints and surgical appliances ... ..	1,674	1,658
	<u>40,707</u>	<u>40,531</u>

## PATIENTS' DISPENSARY ATTENDANCES FOR ATTENTION BY NURSES—

Application of surgical dressings... ..	2,873	2,600
Adjustment of splints and surgical appliances ... ..	522	611
	<u>3,395</u>	<u>3,211</u>

## TUBERCULOSIS AND THE MILK SUPPLY.

The tuberculosis officers co-operate with the local medical officers of health in regard to any case of tuberculosis in a child in which the milk supply is suspected of being the source of infection. The initial procedure is for the tuberculosis officer to inform the medical officer of health, to ask if he is willing to have a bacteriological examination made of the suspected milk, and to take action, if necessary, on the farm. If the milk is designated, *e.g.*, grade A, then the matter is dealt with by the County Medical Officer of Health.

# XVIII.—REPORT FOR DISPENSARY AREA No. 1 (including Lancaster Pulmonary Hospital).

Area (estimated population 269,488) embraces Lancaster, Morecambe and Heysham, Garstang Rural (part), Preston Rural, Walton-le-Dale, Chorley, and Horwich districts. Lytham St. Annes is being transferred from Area No. 1 to the Fylde Sub-Area on 1/10/1934.

Consultant Tuberculosis Officer ... DR. A. D. BRUNWIN.  
(Died 21/6/34).

DR. G. H. LEIGH.  
(From 1/7/34).

(The consultant tuberculosis officer will also be the visiting physician to the Lancaster Pulmonary Hospital when erection is completed.)

Assistant Tuberculosis Officer ... DR. F. C. S. BRADBURY.

Dr. Brunwin, whose untimely death is referred to in the introductory pages of this report, had reported as follows:—

The work of the area has not undergone any change in the year 1933, and on the whole has progressed smoothly and satisfactorily.

From 1932 to the end of the year under review the Mantoux tuberculin skin test has been carried out on 138 patients and has proved useful. A negative result was obtained with 1/1,000 dilution in 40 per cent. of the cases, and these may be considered non-tuberculous.

## ARTIFICIAL LIGHT TREATMENT.

Artificial light centres have been established at the following tuberculosis dispensaries in Area No. 1:—Lancaster (15th July, 1925), Chorley (14th October, 1926), and Preston (29th November, 1927).

There has been no change in the equipment or the methods used during the year, and none of the cases treated calls for special comment.

The following Table 29 shows the results for patients treated at these dispensary centres during 1933:—

### (a) Lancaster Centre.

Form of tuberculosis or part of body affected.	Number of cases treated during 1933.	Condition of patients whose treatment concluded in 1933.				Ceased treatment for other reasons.*	Still under treatment at end of 1933
		Quiescent and apparently well.	Improved.	Stationary.	Worse.		
Skin ... ..	8	1	—	—	—	—	7
Adenitis with abscess formation and skin involvement ... ..	10	4	5	—	—	1	—
Adenitis without softening ... ..	2	—	—	—	—	2	—
Bones, joints, and spine ... ..	1	—	—	—	—	1	—
Abdomen ... ..	4	2	—	—	—	1	1
TOTAL ... ..	25	7	5	—	—	5	8



*(b) Preston Centre.*

Form of tuberculosis or part of body affected.	Number of cases treated during 1933.	Condition of patients whose treatment concluded in 1933.				Ceased treatment for other reasons.*	Still under treatment at end of 1933.
		Quiescent and apparently well.	Improved.	Stationary.	Worse.		
Skin ... ..	9	1	—	—	—	2	6
Adenitis with abscess formation and skin involvement ... ..	17	10	1	—	—	—	6
Adenitis without softening ... ..	12	6	—	—	—	1	5
Bones, joints, and spine ... ..	2	1	—	—	—	1	—
Abdomen ... ..	1	—	—	—	—	1	—
Other non-pulmonary conditions ...	1	—	—	—	—	—	1
<b>TOTAL</b> ... ..	<b>42</b>	<b>18</b>	<b>1</b>	<b>—</b>	<b>—</b>	<b>5</b>	<b>18</b>

*(c) Chorley Centre.*

Form of tuberculosis or part of body affected.	Number of cases treated during 1933.	Condition of patients whose treatment concluded in 1933.				Ceased treatment for other reasons.*	Still under treatment at end of 1933.
		Quiescent and apparently well.	Improved.	Stationary.	Worse.		
Skin ... ..	22	2	2	—	—	2	16
Adenitis with abscess formation and skin involvement ... ..	16	3	2	1	—	1	9
Adenitis without softening ... ..	21	9	1	—	—	1	10
Bones, joints, and spine ... ..	3	—	—	1	—	—	2
Abdomen ... ..	3	1	—	—	—	1	1
Other non-pulmonary conditions ...	3	1	—	1	—	1	—
<b>TOTAL</b> ... ..	<b>68</b>	<b>16</b>	<b>5</b>	<b>3</b>	<b>—</b>	<b>6</b>	<b>38</b>

\* Includes: (1) Patients who did not receive two months' treatment; (2) patients ceasing light treatment prematurely (*e.g.*, removals, unwilling or unable to continue); and (3) patients transferred to sanatoria or hospitals.

## LANCASTER PULMONARY HOSPITAL.

The work of building the new isolation hospital on the northern boundary of Lancaster was commenced by the Lancaster and District Joint Hospital Board in July, 1932, and will be completed in October, 1934. For pulmonary tuberculosis there will be a separate block for 30 patients, and double sleeping shelters for 6 patients, total 36 (males 19, females 17). The accommodation will meet a definite need which has existed in this area since the closing of the Luneside Hospital in October, 1927.

The consultant tuberculosis officer for Dispensary Area No. 1 will be the visiting physician of the tuberculosis block.

## SUMMARY OF DISPENSARY WORK.

Number of tuberculous cases under supervision on 31st December, 1933  
(Definitely tuberculous, 931 ; doubtful, 6.)      ..      ..      ..      ..

... .. 937

Examinations by tuberculosis officer at—	Examinations of <i>new persons</i> and <i>new contacts</i> for diagnosis.	Re-visits or re-attendances of “ <i>old</i> ” cases and “ <i>old</i> ” <i>contacts</i> .
Patients' homes ... ..	219	1,450
Lancaster Chief Dispensary ... ..	175	492
Chorley Branch Dispensary ... ..	124	714
Preston Branch Dispensary ... ..	80	420
	379	1,626
Attendances of patients at dispensaries for artificial light treatment—		
Lancaster Dispensary ... ..	...	570
Chorley Dispensary ... ..	...	2,071
Preston Dispensary ... ..	...	1,417
		4,058
Attendances for artificial pneumothorax treatment (16 individual patients)		132
Care committee meetings attended by—		
(a) Tuberculosis officers ... ..	...	24
(b) Tuberculosis health visitors ... ..	...	42
Lectures or addresses given ... ..	...	1
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals ... ..	...	20
Special visits by tuberculosis officers ( <i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.) ... ..	...	19
Visits by dispensary nurses to patients' homes—		
Routine visits ... ..	...	3,721
Actual nursing ... ..	...	10
Application of surgical dressings ... ..	...	15
Adjustment of splints and surgical appliances ... ..	...	3
		3,749
Patients' dispensary attendances for attention by nurses—		
Application of surgical dressings ... ..	...	674
Sanitary defects reported to the local medical officers of health ... ..	...	6
Sanitary defects which after notification were remedied ... ..	...	5
Disinfections carried out by local sanitary authorities ... ..	...	195
New cases referred by medical practitioners, Pensions authorities, &c., to tuberculosis officer for an opinion as to diagnosis or treatment ... ..	...	511



## XIX.—REPORT FOR DISPENSARY AREA No. 2 (including Withnell Pulmonary Hospital).

Area (estimated population 337,073) embraces Clitheroe, Colne, Nelson, Burnley Rural, Blackburn Rural, Accrington, Darwen, Haslingden, Rawtenstall, and Bacup districts.

Consultant Tuberculosis Officer ... DR. B. MACPHEE.

(Dr. MacPhee is also visiting medical superintendent of the  
Withnell Pulmonary Hospital.)

Assistant Tuberculosis Officers ... DR. S. C. ADAM and

DR. W. FETTES (from 1/10/34.)

(2 days per week)

Dr. MacPhee reports :—

There is no item of outstanding interest to mention with regard to this dispensary area; the work has gone on smoothly as in previous years.

On the 1st December, 1933, the Accrington Dispensary was visited by Dr. T. N. V. Potts, the Medical Officer of Health of the West Riding of Yorkshire, who was accompanied by his Chief Tuberculosis Officer, Dr. G. S. Johnston.

At the chief dispensary laboratory, 1,125 specimens of sputum were examined with the following results :—Positive, 219; negative, 906.

The x-ray apparatus at Accrington Dispensary has given satisfactory service throughout the year; 980 skiagrams were taken and 441 screenings made. In addition, 15 skiagrams were taken and 14 screen examinations made at the Withnell Pulmonary Hospital of dispensary patients who, for convenience, attended that institution as out-patients.

As a further aid to diagnosis in doubtful and difficult cases, 26 bacteriological specimens were sent to the Public Health Laboratory, Manchester, for inoculation tests, with the following results :—Positive, 8; negative, 18.

During the year, the Mantoux test was carried out on 16 children in order to assist in diagnosis.

Artificial pneumothorax treatment is given at the chief dispensary. Occasionally, for convenience, dispensary patients living in the districts around the Withnell Pulmonary Hospital attend that institution for refills.

The County Care fund has again proved extremely valuable in assisting necessitous cases, 77 individual patients, or their dependants, having been assisted at an approximate cost of £210.

The care committee for the districts of Egerton, Eagley and Dunscair has continued its useful work during the year.

I have pleasure in recording the continued co-operation of the medical practitioners, and I would also thank my colleagues, the health visitors, and the clerical staff for their valuable help.

## ARTIFICIAL LIGHT TREATMENT.

Artificial light centres have been established at the following tuberculosis dispensaries in Area No. 2 :—Accrington (26th January, 1932), Nelson (20th Nov., 1928), and Stacksteads (9th Jan., 1928).

None of the cases treated calls for any special comment. The patients' attendances have been, on the whole, very regular.

The following Table 30 shows the results for patients treated at these dispensary centres during 1933 :—

*(a) Accrington Centre.*

Form of tuberculosis or part of body affected.	Number of cases treated during 1933.	Condition of patients whose treatment concluded in 1933.				Ceased treatment for other reasons. *	Still under treatment at end of 1933.
		Quiescent and apparently well.	Improved.	Stationary.	Worse.		
Skin ... ..	20	2	1	—	—	2	15
Adenitis with abscess formation and skin involvement ... ..	13	9	1	1	—	1	1
Adenitis without softening ... ..	22	19	—	—	—	1	2
Bones, joints, and spine ... ..	6	2	1	1	—	1	1
TOTAL ... ..	61	32	3	2	—	5	19

*(b) Nelson Centre.*

Form of tuberculosis or part of body affected.	Number of cases treated during 1933.	Condition of patients whose treatment concluded in 1933.				Ceased treatment for other reasons. *	Still under treatment at end of 1933.
		Quiescent and apparently well.	Improved.	Stationary.	Worse.		
Skin ... ..	12	1	1	2	—	—	8
Adenitis with abscess formation and skin involvement ... ..	9	5	3	—	—	—	1
Adenitis without softening ... ..	18	11	—	1	—	—	6
Bones, joints, and spine ... ..	5	2	—	—	—	—	3
Abdomen ... ..	3	2	—	—	—	—	1
Other non-pulmonary conditions ... ..	2	1	—	—	—	—	1
TOTAL ... ..	49	22	4	3	—	—	20

*(c) Stacksteads Centre.*

Form of tuberculosis or part of body affected.	Number of cases treated during 1933.	Condition of patients whose treatment concluded in 1933.				Ceased treatment for other reasons. *	Still under treatment at end of 1933.
		Quiescent and apparently well.	Improved.	Stationary.	Worse.		
Skin ... ..	8	2	1	—	—	—	5
Adenitis with abscess formation and skin involvement ... ..	15	10	1	—	—	1	3
Adenitis without softening ... ..	14	5	2	1	—	1	5
Bones, joints, and spine ... ..	7	2	1	—	—	2	2
Abdomen ... ..	1	—	—	—	—	—	1
Other non-pulmonary conditions ... ..	1	—	1	—	—	—	—
TOTAL ... ..	46	19	6	1	—	4	16

\* Includes: (1) Patients who did not receive two months' treatment; (2) patients ceasing light treatment prematurely (*e.g.*, removals, unwilling or unable to continue); and (3) patients transferred to sanatoria or hospitals.



## WITHNELL PULMONARY HOSPITAL, NEAR CHORLEY.

*Matron* ... MISS D. WILLMAN.

The County Council in December, 1924, purchased Withnell Hall (including two cottages, outbuildings, and 37 acres of land) situated on the main road from Blackburn to Chorley. The first patient was admitted on the 15th August, 1927. Accommodation is provided for 52 male patients (20 in double cubicles, 8 in single cubicles, 18 in four wards and 6 in shelters). A small treatment block for artificial pneumothorax inductions and refills and minor operations was completed in May, 1933. The hospital serves mainly Dispensary Area No. 2. Three houses were provided on the estate for employees.

The average length of stay of patients at Withnell during 1933 was as under :—

Patients discharged...	...	...	...	...	...	218 days.
Patients who died in the hospital ...	...	...	...	...	...	48 days.
Observation cases ...	...	...	...	...	...	35 days.

Dr. MacPhee reports as follows :—

During the year, 71 patients were admitted to the institution, 60 were discharged, and 11 died ; included in the 71 admissions were 4 patients sent in for observation and diagnosis. The percentage of beds occupied during the year was 96·2.

At the laboratory, 758 specimens of sputum were examined with the following results :—Positive, 480 ; negative, 278.

In the x-ray department 142 skiagrams were taken and 286 screenings made.

During the year special treatment as follows was given :—Artificial pneumothorax was attempted on 14 new patients but in seven instances treatment had to be abandoned ; refills to the number of 149 were given. Nine patients were treated by sanocrysin, and four by artificial light (Jesionek). Blood sedimentation tests numbered 84, and one patient was given lipiodol.

The new treatment block was completed during the year and is now a valuable asset to the institution.

With regard to the arrangements for religious services, I have to mention that during the year the Rev. B. Crosby, Nonconformist Chaplain, resigned, and the Rev. N. F. Priestley was appointed in his place. The Church of England Chaplain, the Rev. J. Swanzee, also resigned and was succeeded by the Rev. S. Archer. The institution is also visited by the Roman Catholic priest, the Rev. T. Carney.

County Aldermen J. W. Baron and E. Boothman, members of the County Tuberculosis Committee, visited the hospital during the year, and a visit was made, on the 1st December, by Dr. T. N. V. Potts, the Medical Officer of Health of the West Riding of Yorkshire, who was accompanied by his Chief Tuberculosis Officer, Dr. G. S. Johnston.

One probationer nurse gained the certificate of the Tuberculosis Association.

The matron again organised her annual motor coach trip for the patients, who were taken over a route covering some of the Yorkshire dales and Morecambe. The patients eagerly look forward to these excursions.

Arrangements have been made to re-organise the wireless installation and it is hoped that a new and more up-to-date set will be acquired. Towards that object the Tuberculosis Committee has kindly granted £25.

Recreation, so essential to patients in an institution like Withnell, has again been varied and seasonal; during the winter months there were concerts, cinematograph exhibitions, table games and billiards, and in summer, bowls, croquet, etc. At Christmas most successful concerts were given by the patients and by the staff. On one occasion they combined and gave an entertainment to which their friends were invited. These efforts help to foster the right atmosphere in the hospital.

The staff and patients' libraries were well patronised and appreciated.

Throughout the year the behaviour of the patients has been, as usual, exemplary. In conclusion I would place on record my appreciation of the help of my colleagues, the matron, and the staff.

#### SUMMARY OF DISPENSARY WORK.

Number of tuberculous cases under supervision on 31st December, 1933  
(Definitely tuberculous, 1,155; doubtful, 4.) ... .. 1,159

Examinations by tuberculosis officer at—					Examinations of <i>new persons</i> and <i>new contacts</i> for diagnosis.	Re-visits or re-attendances of " <i>old</i> " cases and " <i>old</i> " <i>contacts</i> .
Patients' homes	...	...	...	...	239	239
Accrington Chief Dispensary	...	...	...	...	327	1,078
Darwen Branch Dispensary	...	...	...	...	68	158
Nelson Branch Dispensary...	...	...	...	...	217	562
Stacksteads Branch Dispensary	...	...	...	...	107	448
					719	2,246



Attendances of patients at dispensaries for artificial light treatment—							
Accrington Dispensary	...	...	...	...	...	...	1,644
Nelson Dispensary	...	...	...	...	...	...	1,785
Stacksteads Dispensary	...	...	...	...	...	...	1,977
							5,406
Attendances for artificial pneumothorax treatment (31 individual patients) ..							400
Care committee meetings attended by tuberculosis health visitors	...	...	...	...	...	...	2
Lectures or addresses given	...	...	...	...	...	...	1
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals	...	...	...	...	...	...	47
Special visits by tuberculosis officers ( <i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.)	...	...	...	...	...	...	6
Visits by dispensary nurses to patients' homes—							
Routine visits	...	...	...	...	...	...	5,968
Actual nursing	...	...	...	...	...	...	221
Application of surgical dressings	...	...	...	...	...	...	92
Adjustment of splints and surgical appliances	...	...	...	...	...	...	372
							6,653
Patients' dispensary attendances for attention by nurses—							
Application of surgical dressings	...	...	...	...	...	...	692
Adjustment of splints and surgical appliances	...	...	...	...	...	...	247
							939
Sanitary defects reported to the local medical officers of health	...	...	...	...	...	...	18
Sanitary defects which after notification were remedied	...	...	...	...	...	...	18
Disinfections carried out by local sanitary authorities	...	...	...	...	...	...	1,697
New cases referred by medical practitioners, Pensions authorities, &c., to tuberculosis officer for an opinion as to diagnosis or treatment.	...	...	...	...	...	...	810

**XX.—REPORT FOR DISPENSARY AREA No. 3**  
(including from 1st July, 1933, Wolstenholme Pulmonary Hospital).

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Area (estimated population 365,790) embraces Ramsbottom, Littleborough, Radcliffe, Heywood, Crompton, Royton, Prestwich, Middleton, Chadderton, Failsworth, Ashton-under-Lyne, Mossley, and Denton districts.

Consultant Tuberculosis Officer ... **DR. G. FLETCHER.**  
(Dr. Fletcher is also visiting medical superintendent of Wolstenholme Pulmonary Hospital.)

Assistant Tuberculosis Officers ... **DR. C. BERRY and**  
**DR. J. L. ARMOUR.**

Dr. Fletcher reports :—

During the year 1933, the work of this area proceeded smoothly along the usual lines.

On the 20th September, we had the pleasure of a visit from the County Tuberculosis Committee. The members were shown something of the working of the dispensary, and made an inspection of the accommodation.

For some years now the chief dispensary at Ashton-under-Lyne has been too small for the work of the area and efforts are being made to get more suitable premises. Steps are also being taken to secure a more commodious building for the Oldham district.

At the meeting of the North Western Tuberculosis Society in January, skiagrams of some of the more interesting cases from this area were shown and discussed.

Early in the year an address was given to a well-attended meeting of the unemployed in the Crompton district.

The care committees at Ashton-under-Lyne and Prestwich assisted necessitous cases in these areas, expending £238 16s. 3d. and £3 9s. respectively. The Radcliffe and Whitefield Relief Fund for Consumptives dealt with 18 cases at a cost of £158 15s. 10d. The Ashton-under-Lyne Care Committee held a successful dance in March, and through the kindness of Councillor E. Broadbent, the chairman of the committee, the proceeds of a special concert were devoted to after-care work. A pleasant and profitable visit was made in May by this care committee to Wrightington Hospital, where Dr. Pask and his staff conducted the party through the institution and explained the working of the various departments.

The County care fund, which deals with areas in which no voluntary care committee operates, assisted 65 cases at a cost of £149 10s. 8d.

During the year, 1,918 skiagrams of dispensary cases were taken at Ashton-under-Lyne Dispensary, as compared with 1,960 in 1932.



At the Ashton-under-Lyne Dispensary, 1,632 specimens of sputum were examined, 465 being positive and 1,167 negative.

Consultation visits were made to Aitken Sanatorium and Chadder-ton Pulmonary Hospital, and monthly visits were also made to Wolstenholme Pulmonary Hospital before it was taken over by the County Council.

I have again to record my appreciation of the cordial co-operation of the practitioners in this area, and of the assistance of my medical, nursing and clerical colleagues during the year.

#### ARTIFICIAL LIGHT TREATMENT.

Artificial light centres have been established at the following tuberculosis dispensaries in Area No. 3 :—Ashton-under-Lyne (11th September, 1925), and Radcliffe (20th July, 1928).

The number of patients attending the light centres at Ashton-under-Lyne and Radcliffe shows no marked difference as compared with 1932.

The treatment was carried on along the usual lines, and the results are similar to those obtained in former years.

In addition to the patients classified in the accompanying tables, 128 cases which had received light treatment with good results attended the dispensaries for observation.

The following Table 31 shows the results for patients treated at these centres during 1933 :—

##### (a) Ashton-under-Lyne Centre.

Form of tuberculosis or part of body affected.	Number of cases treated during 1933.	Condition of patients whose treatment concluded in 1933.				Ceased treatment for other reasons.*	Still under treatment at end of 1933.
		Quiescent and apparently well.	Improved.	Stationary.	Worse.		
Skin ... ..	27	3	—	—	—	4	20
Adenitis with abscess formation and skin involvement ... ..	32	9	—	—	—	5	18
Adenitis without softening ... ..	24	7	—	—	—	5	12
Bones, joints, and spine ... ..	5	1	—	—	—	1	3
Abdomen ... ..	9	3	—	—	—	—	6
Other non-pulmonary conditions ... ..	2	1	—	—	—	—	1
Pulmonary and non-pulmonary combined :— † T.B. plus and adenitis with abscess formation ... ..	1	—	—	—	—	1	—
TOTAL ... ..	100	24	—	—	—	16	60

*(b) Radcliffe Centre.*

Form of tuberculosis or part of body affected.	Number of cases treated during 1933.	Condition of patients whose treatment concluded in 1933.				Ceased treatment for other reasons. *	Still under treatment at end of 1933.
		Quiescent and apparently well.	Improved.	Stationary.	Worse.		
Skin ... ..	13	3	—	—	—	6	4
Adenitis with abscess formation and skin involvement ... ..	18	5	—	—	—	3	10
Adenitis without softening ... ..	3	1	—	—	—	—	2
Other non-pulmonary conditions ...	4	—	—	—	—	1	3
<b>TOTAL</b> ... ..	<b>38</b>	<b>9</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>10</b>	<b>19</b>

\* Includes: (1) Patients who did not receive two months' treatment; (2) patients ceasing light treatment prematurely (*e.g.*, removals, unwilling or unable to continue); and (3) patients transferred to sanatoria or hospitals.

† Treatment for non-pulmonary condition only.

## WOLSTENHOLME PULMONARY HOSPITAL, NORDEN.

Matron

...

MISS S. HOLMES (to 6-8-34).

MISS E. G. GLASS (from 7-8-34).

The County Council, on the 1st July, 1933. took over from the Rochdale Corporation Wolstenholme Hall, Norden, which had been used by them as a pulmonary hospital for 45 adult male patients of whom 25 to 30 were sent by the County Council. The estate is situated on the Edenfield road,  $3\frac{1}{2}$  miles west of Rochdale, and contains  $7\frac{1}{4}$  acres of land with two cottages and outbuildings. The County Council are erecting entirely new buildings for the treatment of 55 male patients accommodated as under:—8 in single cubicles, 20 in double cubicles, 23 in five wards, and 4 in double sleeping shelters. The Hall will be used, after a certain amount of adaptation, for housing the nursing and domestic staffs and for other administrative purposes. The Hall will continue to be used for the treatment of a number of patients until the new buildings are ready in October, 1934.

The capital cost of the scheme is £17,498, representing £318 per bed, and a tender for the building work was accepted in July, 1933. (See plans of the new buildings reproduced on folder here inserted).

Of the 55 beds, the County Council have undertaken to lease to the Rochdale Corporation 25 beds.

The average length of stay of patients at Wolstenholme during 1933 was:—Patients discharged 110 days, patients who died in the hospital 206 days.

Dr. Fletcher reports as follows:—

On the 1st July, 1933, 17 County patients were undergoing treatment. From that date to the 31st December, there were 33 admissions, 8 deaths, 11 discharges and 4 transfers to sanatoria.

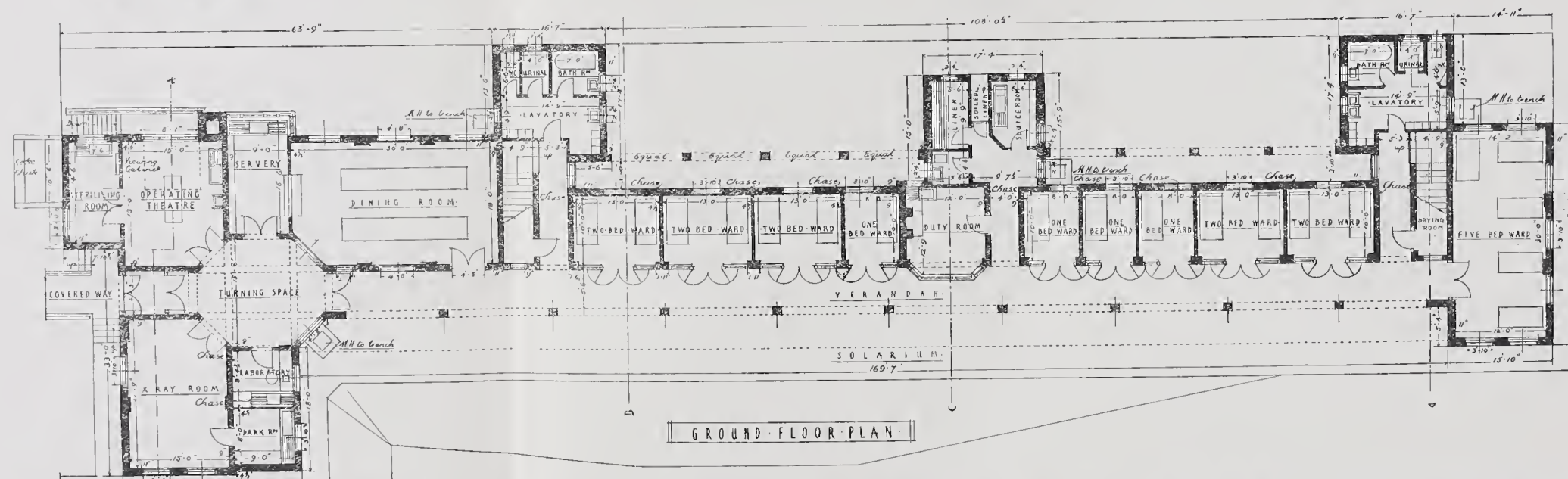
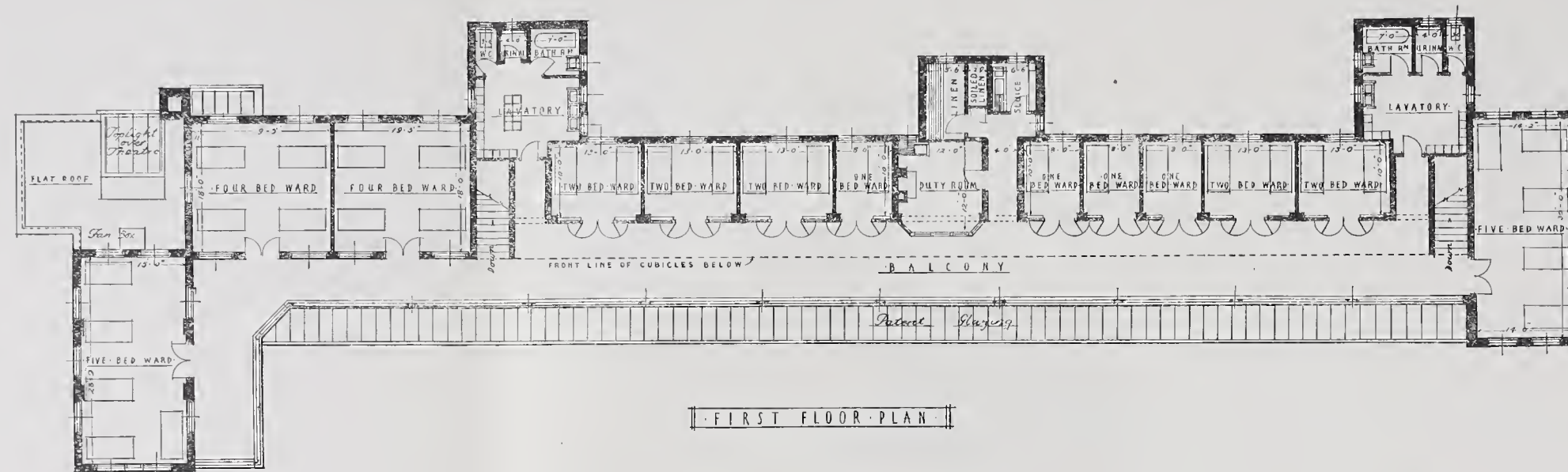


WOLSTENHOLME  
PULMONARY HOSPITAL,  
NORDEN.

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PLANS OF  
PATIENTS' NEW BLOCK.

# WOLSTENHOLME PULMONARY HOSPITAL, NORDEN—PLANS OF PATIENTS' NEW BLOCK.

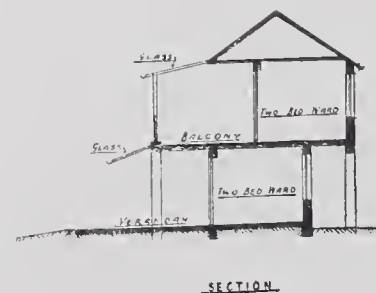


The above plans show the new buildings for patients which are being erected at Wolstenholme, Norden; the original Hall will be used for staff and administration. The hospital will provide accommodation for 55 patients (51 in cubicles and wards, and 4 in wooden sleeping shelters). The institution will form the hospital unit for Dispensary Area No. 3, and illustrates the County scheme which provides a small hospital for the consultant tuberculosis officer of each dispensary area.

Attention is invited to a feature in the planning of the block whereby the cubicles on the first floor are set back so as to allow more light to the ground floor cubicles by reducing the "overhang" of the balcony and compensating for such reduction by providing a sloping glass roof. This innovation is shown by the dotted lines on the ground floor plan and more particularly by the section reproduced on the right hand side.

The patients' beds on the ground floor and first floor can be wheeled outside under cover, the verandahs on both floors measuring 10 ft. 6 ins.

[Plans prepared by County Architect.]





A more efficient wireless installation has been provided and is much appreciated by the patients. Through the kindness of certain friends, several concerts have been given.

The x-ray work (pending completion of the new buildings) and the sputum tests were carried out at the Ashton-under-Lyne Dispensary. The skiagrams taken numbered 38, and the sputum examinations totalled 159; of the latter, 125 were positive and 34 negative.

The County Tuberculosis Committee visited the institution on the 20th September and inspected the buildings and the grounds.

#### SUMMARY OF DISPENSARY WORK.

Number of tuberculous cases under supervision on 31st December, 1933

(Definitely tuberculous, 1,491; doubtful, 0.) ... .. 1,491

					Examinations of <i>new persons</i> and <i>new contacts</i> for diagnosis.	Re-visits or re-attendances of " <i>old</i> " <i>cases</i> and " <i>old</i> " <i>contacts</i> .
Examinations by tuberculosis officer at—						
Patients' homes	...	...	...	...	223	492
Ashton-under-Lyne Chief Dispensary	...				449	2,044
Middleton Branch Dispensary	...	...			64	343
Mossley Branch Dispensary (Closed 31/3/34.)					35	136
Oldham Branch Dispensary	...	...			285	1,077
Radcliffe Branch Dispensary	...	...			193	800
Rochdale Branch Dispensary	...	...			172	586
					1,198	4,986
Attendances of patients at dispensaries for artificial light treatment—						
Ashton-under-Lyne Dispensary	...	...	...	...	4,212	} 5,646
Radcliffe Dispensary	...	...	...	...	1,434	
Attendances for artificial pneumothorax treatment (29 individual patients)						399
Care committee meetings attended by—						
(a) Tuberculosis officers	...	...	...	...	...	11
(b) Tuberculosis health visitors	...	...	...	...	...	8
Lectures or addresses given	...	...	...	...	...	1
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals					...	97
Special visits by tuberculosis officers ( <i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.)					...	9
Visits by dispensary nurses to patients' homes—						
Routine visits	...	...	...	...	...	7,927
Actual nursing	...	...	...	...	...	127
Application of surgical dressings	...	...	...	...	...	7
Adjustment of splints and surgical appliances	...	...	...	...	...	588
Patients' dispensary attendances for attention by nurses—						
Application of surgical dressings	...	...	...	...	...	69
Adjustment of splints and surgical appliances	...	...	...	...	...	151
Sanitary defects reported to the local medical officers of health					...	93
Sanitary defects which after notification were remedied					...	38
Disinfections carried out by local sanitary authorities					...	338
New cases referred by medical practitioners, Pensions authorities, &c., to tuberculosis officer for an opinion as to diagnosis or treatment					...	844

## XXI.—REPORT FOR DISPENSARY AREA No. 4

(including Peel Hall Pulmonary Hospital).

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Area (estimated population 359,220) embraces Westhoughton, Atherton, Farnworth, Leigh, Swinton and Pendlebury, Eccles, and Stretford districts.

Consultant Tuberculosis Officer ... DR. G. JESSEL.  
(Dr. Jessel is also visiting medical superintendent of Peel Hall Pulmonary Hospital.)

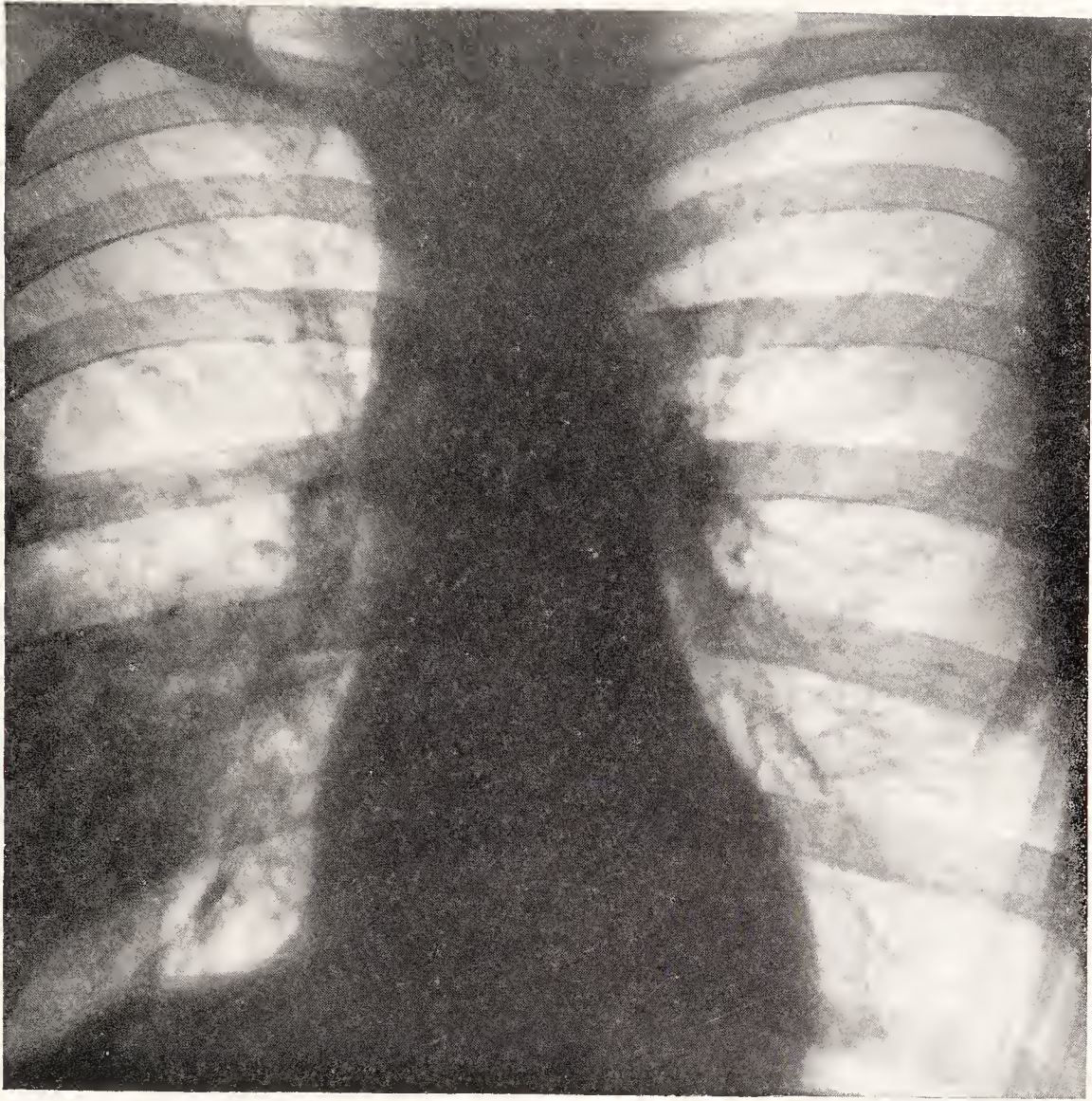
Assistant Tuberculosis Officers ... DR. A. B. JAMIESON and  
DR. H. J. VILLIERS.

Dr. Jessel reports :—

It is evident from even a cursory glance at the figures for this area that there has been much activity at and in connection with the five dispensaries. A little imagination, however, is needed in order to visualise the amount of thought and purposeful effort that is necessary to deal adequately with those who present themselves for diagnosis and treatment. They are not so much merchandise to be handled and then forgotten ; they represent an appreciable number of the patients in connection with whom specialist help is indicated. A diagnosis of tuberculosis, after full investigation, marks the beginning of personal association between the dispensary staff and the family as a unit, the success of which depends upon the degree of confidence that can be created and maintained for an indefinite period. The great technical advances that have been made in diagnosis and treatment are gradually becoming realised and, in their way, they are no less remarkable than those manifest in other spheres of life and activity. Diagnosis has, of recent years, become much more precise as the result of the intelligent use of good x-ray apparatus. In cases of suspected fracture, failure to use such facilities ranks as negligence, and I think the time is not far distant when a similar view will be taken in cases where there are reasonable grounds for suspecting tuberculosis. Serial skiagrams on celluloid and paper are regularly made of the bulk of our patients, so that it has been possible, during the past few years, to build up a collection of x-ray photographs illustrative of the various aspects of chest disease and the many clinical manifestations of tuberculosis. A good many lantern slides have been made of typical pictures and have proved useful for lectures and demonstrations. Reduced prints of the skiagrams of their patients are also sent to the medical practitioners in suitable cases. Brief accounts of two illustrative cases,



## ABSCESS OF LUNG.



A.B.1(a).—N. W., male, aged 31. Skiagram taken 2-11-33. In the outer and middle portions of the right lower zone is an extensive, shaggy opaque area, the remainder of the lungs being clear.

*Right side.*

*Left side.*



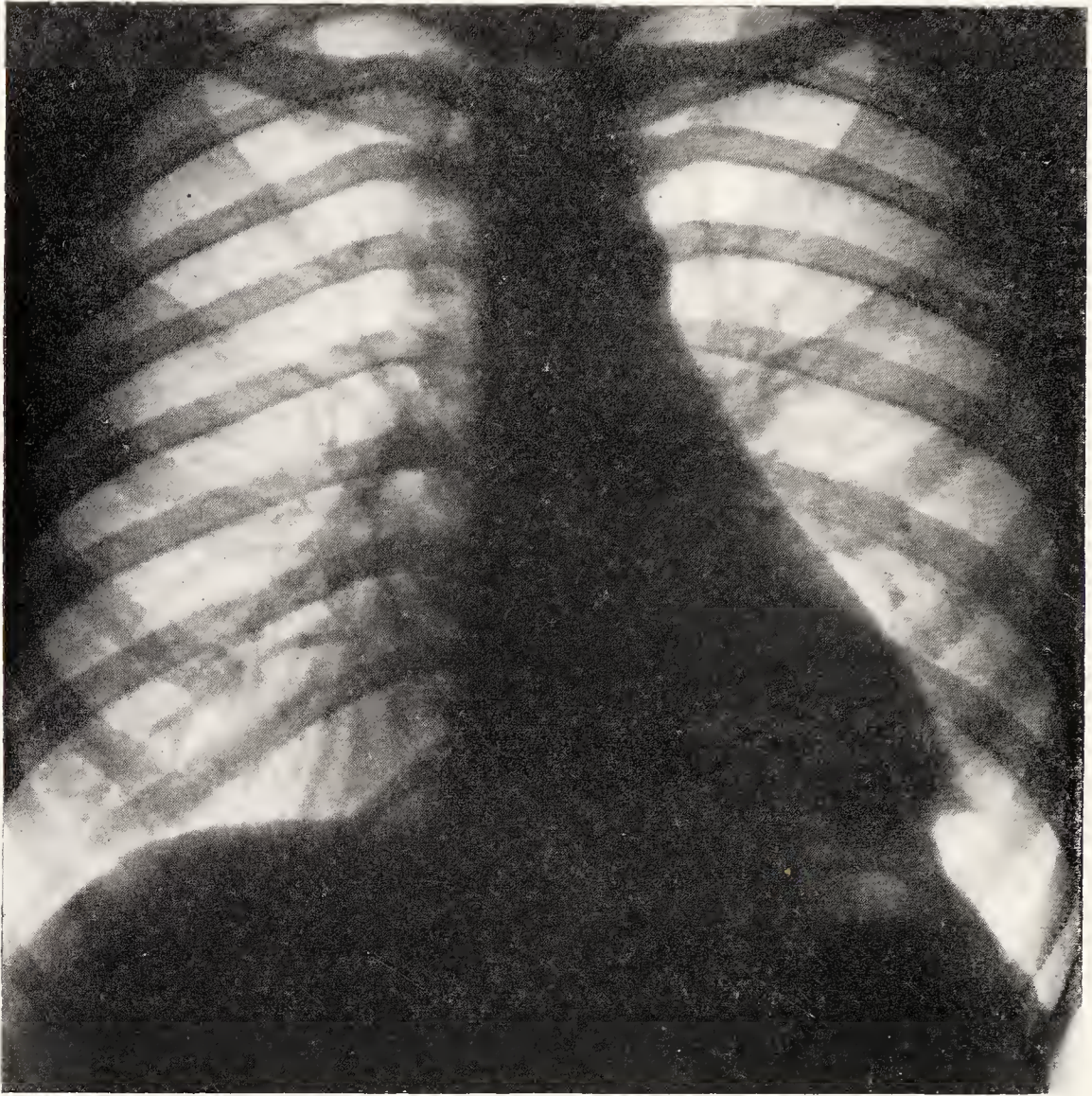
A.B.1(b).—Same patient. Skiagram taken 7-11-33. Lateral view shows presence of cavity in front of spine. The fluid content is seen as a small, dark area with horizontal upper margin, and some air above seen as a lighter triangle.

For notes on case see page 89.

[Skiagrams taken at Eccles Dispensary.]



## PARTIAL ATELECTASIS OF LUNG.



A.S.1(a).—E. M., female, aged 24. Skiagram taken 20-2-34. Inside the heart shadow, to the left of the spine, is a dense opacity with curvo-linear outer margin forming triangle with vertebral column.

*Right side.*

*Left side.*



A.S.1(b).—Same patient. Lateral view. Skiagram taken 20-2-34 shows a dark, triangular area above the left diaphragm corresponding to the partial collapse. For notes on case see page 89.

[Skiagrams taken at Eccles Dispensary.]



*viz.*, abscess of lung (showing the value of lateral radiography of the chest) and partial atelectasis of lung are given below :—

N.W., male, aged 31.

Family history : Negative for tuberculosis.

Previous history : Cough for years.

Duration of illness : A few days.

Symptoms : Headache a few days ago following " cold " ; blood-stained sputum, slight cough and sputum, slight dyspnoea, hoarseness ten days, ? loss of weight.

Physical signs : Slight M.I. ; nil definite ; pharynx, epiglottis and arytenoids inflamed, cords not seen.

Sputum : Negative (eight specimens).

Guinea-pig inoculation : Negative.

Diagnosis : Abscess of lung. (See skiagrams A.B. 1(a) and A.B. 1(b) ).

E.M., female, aged 24.

Family history : Negative for tuberculosis.

Previous history : Negative—no serious illness.

Duration of illness : Five to six months.

Symptoms : Fourteen teeth extracted six months ago, two weeks later cough and sputum developed and have persisted, one week ago coughed up a mouthful of blood, feels well generally.

Physical signs : No M.I., flattening left side chest, small patch blowing breathing left base, no crepitations.

Sputum : Negative (three specimens).

Diagnosis : Partial atelectasis lower lobe. (See skiagrams A.S. 1(a) and A.S. 1(b) ).

The older means of diagnosis, however, are still utilised to the full, and a final decision as to a patient's illness is, as heretofore, based upon a careful appraisalment of the whole of the available evidence. Mantoux tests, though mainly of epidemiological value, are occasionally useful. If negative, they are evidence that infection with tuberculosis has not occurred, unless the person is dying or recovering from one of the exanthemata, *e.g.*, measles, when sensitivity is reduced or lost. The following is a case in point :—

K.J., aged 9 months. Notified as suffering from tuberculous glands because of swellings in the neck, and the neck was incised at a hospital. A week later the child was admitted to another hospital with symptoms of stomatitis and fever, but under treatment the fever subsided and the child's condition became very good. At my suggestion, a Mantoux test was done and was negative in 1/1,000 dilution. The conclusion reached was that the child was not suffering from tuberculosis and that the condition was associated with stomatitis.

Considerations of public health have continued to receive due attention. In particular, careful investigations have been made in order to ascertain, if possible, the source of infection of infants and young children dying from tuberculous meningitis and peritonitis. In such cases co-operation between the tuberculous officer and the local medical officer of health is often useful. The following is a case in point :—

J.B., aged 2 years. Died 23rd November, 1933. Death certified as due to tuberculous peritonitis. No history of tuberculosis in family. Child said to have been healthy. Fed on cow's milk. Had abdominal pain for three weeks, then admitted to hospital. Case referred to medical officer of health, who reported :—

" On the 14th January, 1932, a sample of milk was taken from milkman, in which tubercle bacilli were found. On investigation by the County Veterinary

Inspector one cow was found to be in an advanced state of tuberculosis. A further sample taken from the same milkman (the milk being supplied by a different farmer) was also found to contain tubercle bacilli. On examination of the herd a cow was found to be giving tuberculous milk. A further sample, taken in February, 1933, did not reveal any tubercle bacilli."

Sometimes an ambulant case of pulmonary tuberculosis, who is in fairly good health but whose sputum contains tubercle bacilli, is compelled owing to straitened financial circumstances to live in an overcrowded home. To send such a person, not requiring special treatment, to a residential institution would be extravagant and unwelcome to the patient. To supplement his resources, so that he can obtain an additional room, is to provide a practical and economical solution of the difficulty. The following is an illustrative case:—

W.J.L., male, aged 48. Tubercle bacilli in sputum. Had six months' institutional treatment two years ago. Patient rented two rooms for himself, wife, and two children, in a large house occupied by three families. He had not the means to pay for an additional room. His general condition was fairly good, and he was considered fit for work of a suitable character, if this could be obtained. The cost of an additional room (3s. 0d. weekly), in order that the man might sleep alone, is being borne by the County care fund.

It is pleasing to record a continuance of the willing co-operation of medical and nursing colleagues. In particular, my thanks are due to my senior clerk, Mr. T. Naylor, for help in the production of lantern slides and figures for lectures and addresses, and of unofficial medical records likely to be of special value in clinical studies.

#### ARTIFICIAL LIGHT TREATMENT.

The artificial light centre at the Eccles Dispensary was established on the 1st December, 1927.

There has been a slight decline in the number of cases treated, 110 in 1933 as compared with 121 in 1932, and in the numbers discharged as quiescent, which were 50 and 54 respectively. The average duration of treatment of the cases discharged as quiescent was 6·9 months as compared with 7·6 months in 1932. Four cases received a second period of treatment owing to reactivation of old lesions. On account of the decline in the number of female cases, it has been possible to start a fourth session per week for such cases. The methods employed have been described by me in detail in earlier reports and are still largely based on those introduced at the London Hospital by Dr. Sequeira and successfully continued under the direction of Dr. W. J. O'Donovan. They consist of prolonged general exposures with long-flame carbon arc lamps, and/or the use of the Jesionek and Kromayer lamps, together with various forms of local treatment, to which I attach considerable importance, as may be required, *e.g.*, creosote and salicylic acid plaster, acid nitrate of mercury ointment, incision of local abscesses, division



of keloid bands, etc. The experience gained in the last six years, during which time 439 patients have been treated, has definitely proved that the methods in use at the Eccles Dispensary have produced and are still producing a consistent series of satisfactory results, excluding those few cases of lupus which, as is well known, fail to respond to any form of treatment. Fortunately, however, lupus is a rapidly disappearing disease.

The following Table 32 shows the results for patients treated during 1933:—

*Eccles Centre.*

Form of tuberculosis or part of body affected.	Number of cases treated during 1933.	Condition of patients whose treatment concluded in 1933.				Ceased treatment for other reasons *	Still under treatment at end of 1933.
		Quiescent and apparently well.	Improved.	Stationary.	Worse.		
Skin ... ..	24	7	3	—	—	3	11
Adenitis with abscess formation and skin involvement ... ..	32	18	—	—	—	3	11
Adenitis without softening ... ..	52	23	3	—	—	5	21
Bones, joints, and spine ... ..	1	1	—	—	—	—	—
Pulmonary and non-pulmonary combined:— †T.B. minus and adenitis without softening ... ..	1	1	—	—	—	—	—
TOTAL ... ..	110	50	6	—	—	11	43

\* Includes: (1) Patients who did not receive two months' treatment; (2) patients ceasing light treatment prematurely (*e.g.*, removals, unwilling or unable to continue); and (3) patients transferred to sanatoria or hospitals.

† Treatment for non-pulmonary condition only.

PEEL HALL PULMONARY HOSPITAL, LITTLE HULTON.

*Matron ... MISS E. SIMMONS.*

The Hall, with about 17 acres of land attached thereto, was presented in 1914 to the Lancashire County Council by Mr. A. Wynne-Corrie, and an additional 20 acres of land, and later 8 acres, have been purchased. The adaptation of the premises as a pulmonary hospital—delayed owing to the Great War—was completed in 1921.

The hospital, accommodating 56 adult males, serves principally Dispensary Area No. 4 in taking advanced, observation and educational cases.

Mr. H. Morriston Davies is the visiting consulting chest surgeon.

A motor ambulance is provided, and is available also for conveying patients to and from other hospitals.

The average length of stay of patients at Peel Hall during 1933 was as under:—

Patients discharged ... .. 194 days.

Patients who died in the hospital ... .. 116 days.

Dr. Jessel reports as follows on the year's work at the hospital :—

This hospital is very closely linked up with our dispensaries, and the patients are nearly all resident in the area, so that after diagnosis they receive treatment within easy access of their homes. On their discharge they return to the care of the dispensary staff who work in conjunction with the family doctor.

Although the fundamental basis of all successful treatment, *viz.*, controlled rest, is still closely adhered to, the various modern methods that hold out any real promise are freely utilised.

*Artificial pneumothorax* is the best adjunct to the sanatorium principle that we possess. I have already in previous reports and elsewhere\* produced evidence to show that the results of collapse therapy in a given time are appreciably better than the effects of treatment without it, and that it is particularly useful in leading to the disappearance of bacilli from the sputum, thereby reducing the risks of infection. The value of the treatment in cavity cases depends upon whether the cavity can be closed. If so, the result is likely to be good. This type of case is illustrated by a boy aged 8, who has received treatment at Peel Hall (see skiagrams A.P. 1(a), 1(b) and 1(c) ).

*Phrenicectomy* is a useful addition or substitute in cases where artificial pneumothorax is partial or impossible owing to adhesions, and the visits of Mr. Morrision Davies for the purpose of performing this operation are of the greatest value. It is significant that there is a remarkable willingness to accept either of these forms of treatment. One would not expect an apical cavity to be influenced by phrenicectomy, but sometimes closure has followed shortly afterwards (see skiagrams Ph. 1(a) and 1(b) ).

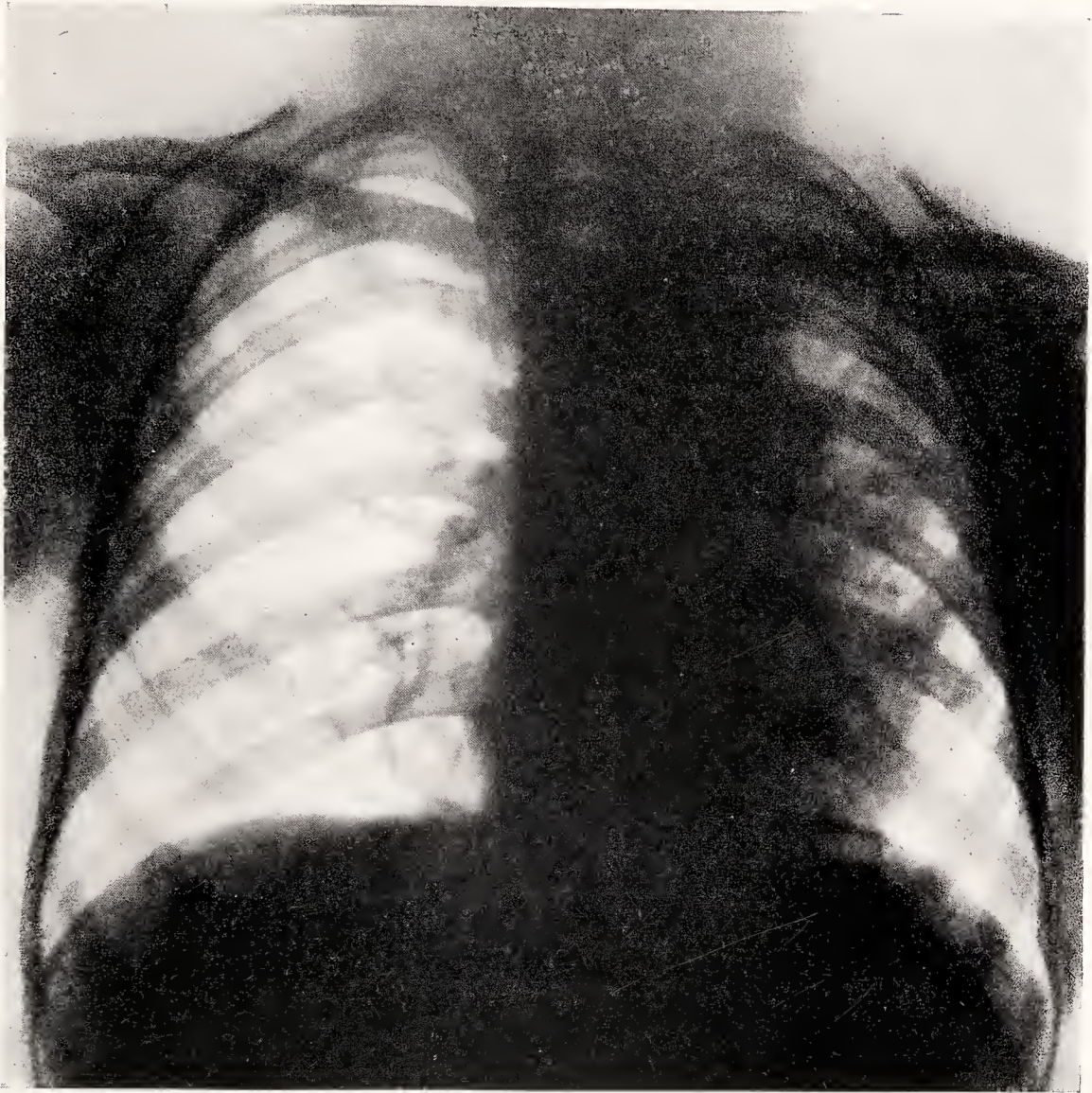
*Sanocrysin*, though useful in some cases, is of limited value, and our experience is in conformity with that of most others who have treated more than a few cases by this method. In 1930, I reported the results of 33 cases and, after further experience, I see no reason to alter the attitude of qualified optimism then adopted. I use it in cases receiving artificial pneumothorax where there is a fresh exudative lesion on the opposite side, and in bilateral cases with fair resistance which are unsuitable for artificial pneumothorax.

It must be remembered that we are treating persons and not diseases, and in an illness so prolonged as tuberculosis the mental and spiritual needs of the patients must of necessity receive adequate attention. In previous reports I have detailed the various amenities, both indoor and outdoor, that are available for the comfort and happiness of our patients, and it is perhaps sufficient evidence of their quantity and quality to mention that irregular and premature discharges are rare and exceptional.

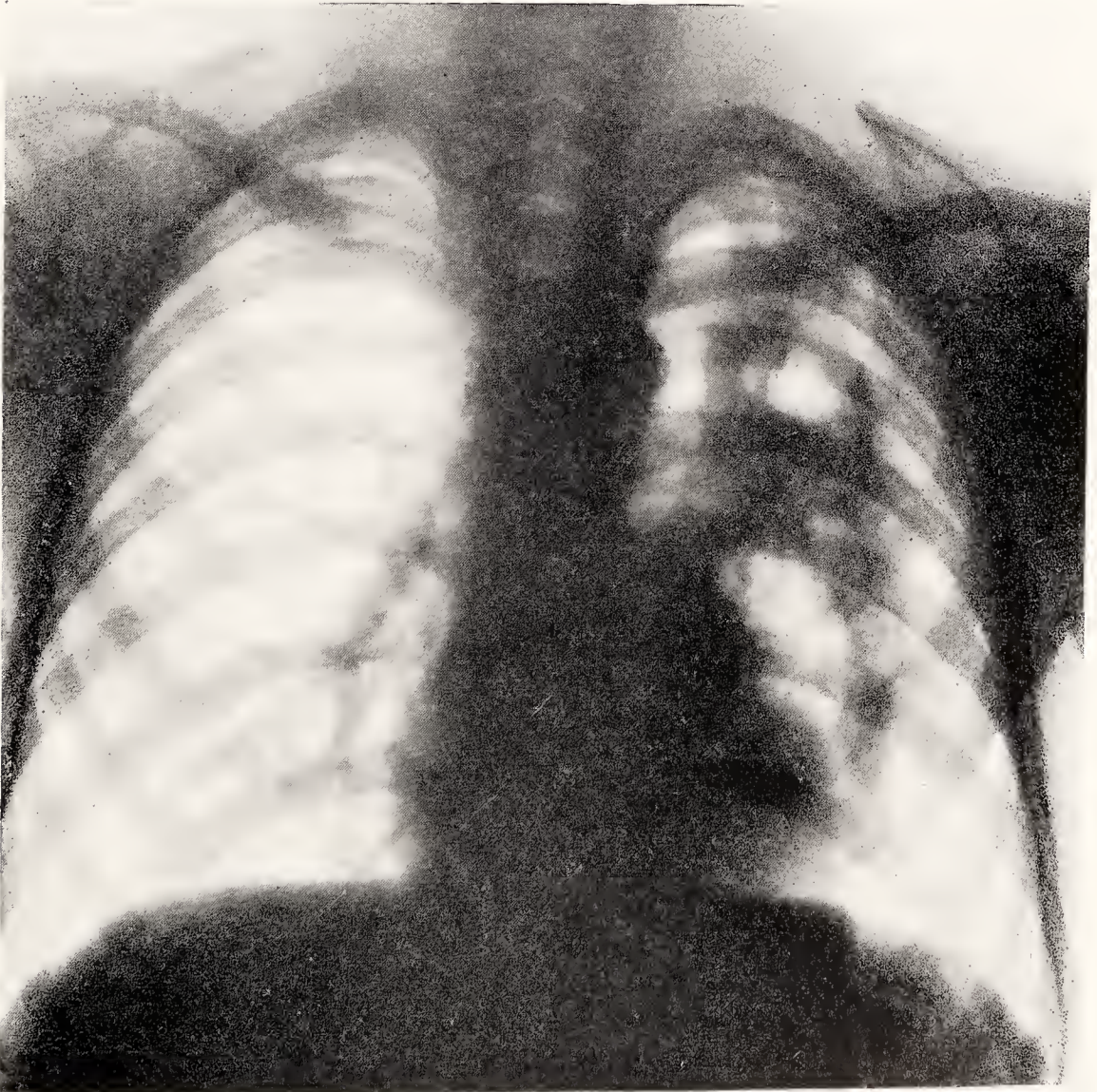
\* *Lancet*, 1933, II, 1360.



## ARTIFICIAL PNEUMOTHORAX.



A.P.1(a).—T. C., male, aged 8. Skiagram taken 11-7-33 shows extensive disease of the left lung.



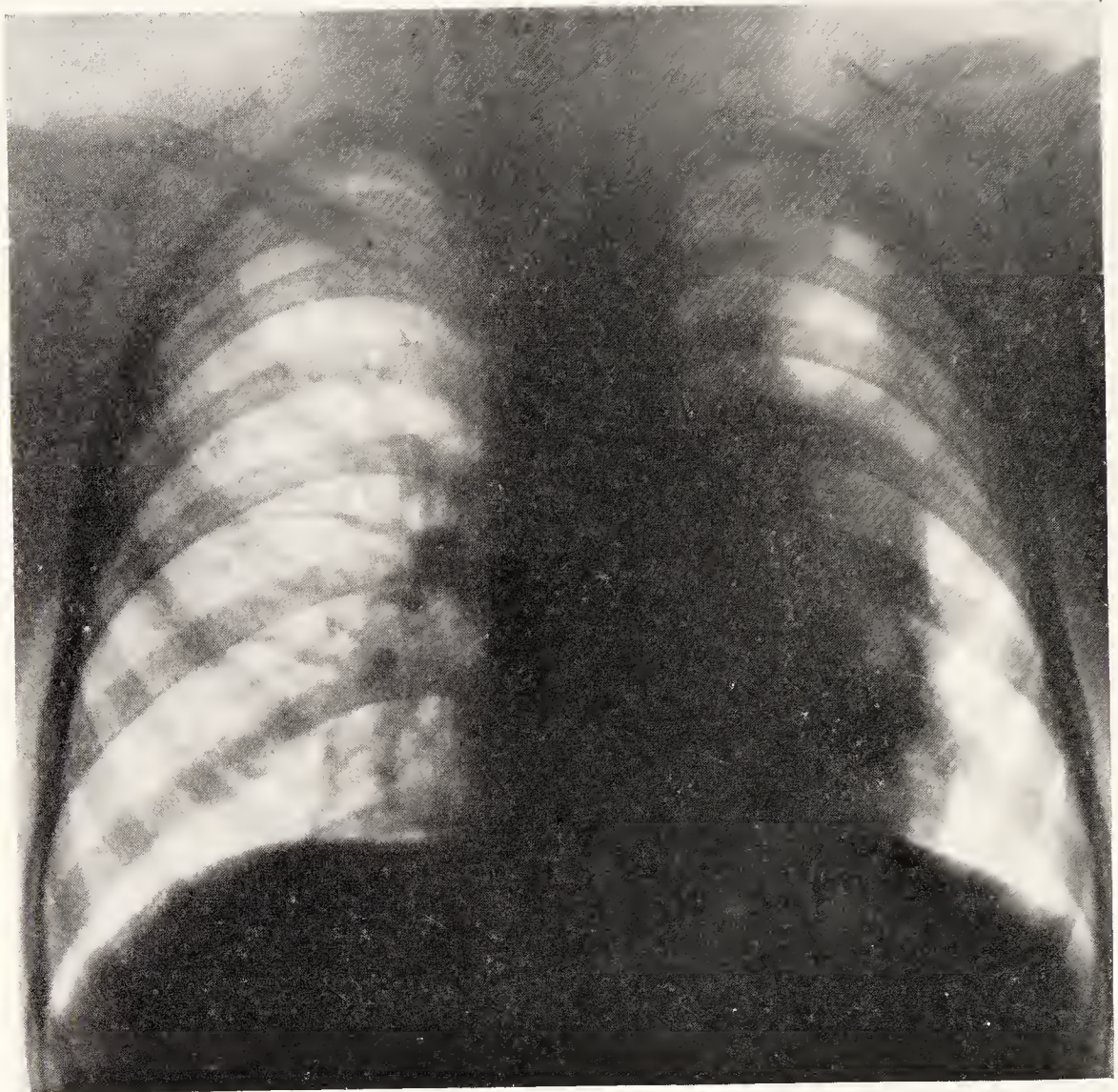
A.P.1(b).—Same patient. Skiagram taken 30-8-33 shows partial collapse of left lung following artificial pneumothorax treatment, and, as frequently happens, the presence of a large cavity is revealed.

*Right side.*

*[Skiagrams taken at Peel Hall Pulmonary Hospital.]*  
*Left side.*

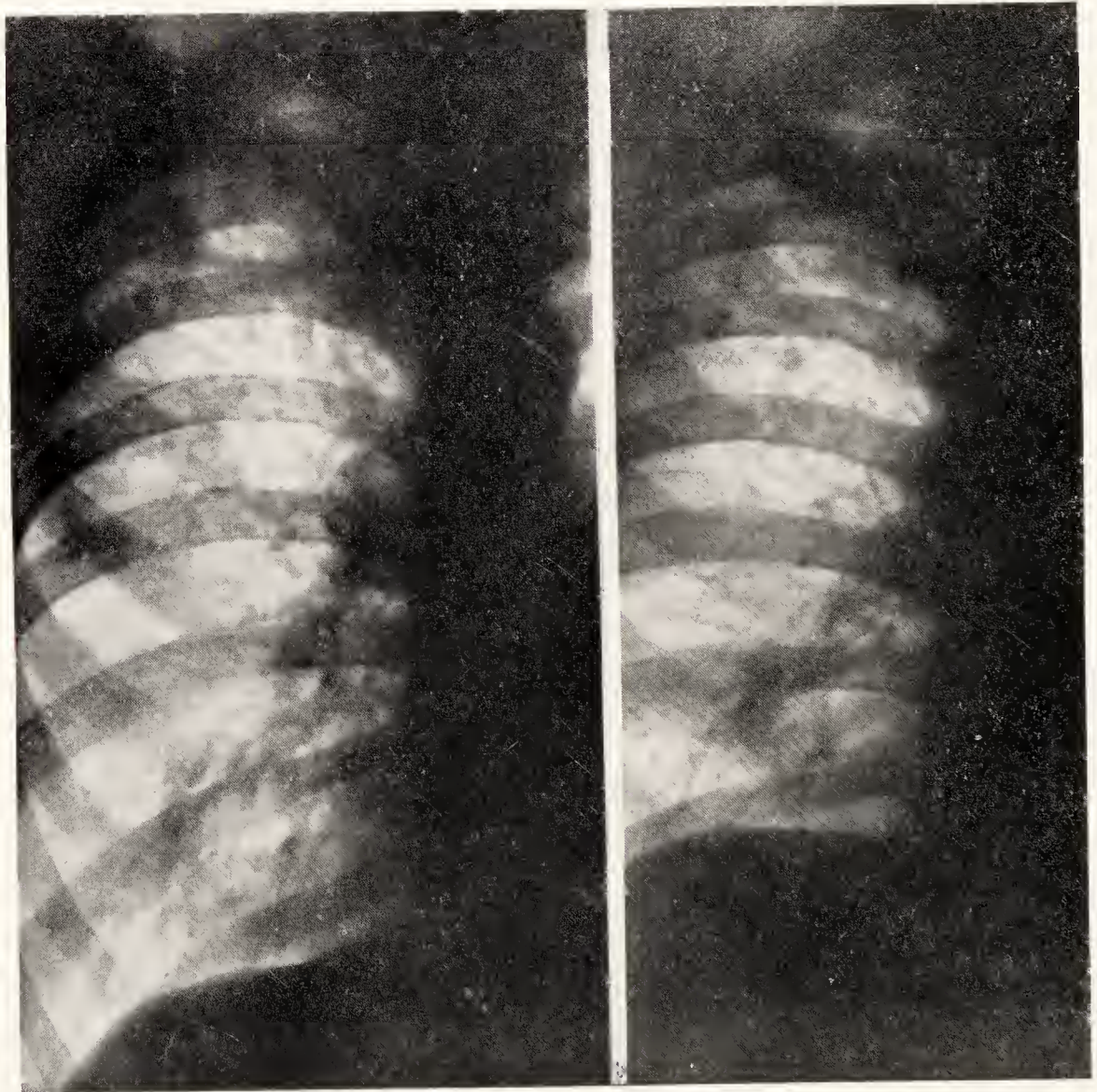


## ARTIFICIAL PNEUMOTHORAX (contd.).



A.P.1(c).—Same patient. Skiagram taken 9-10-33 shows further stage in artificial pneumothorax treatment—flattening out of the cavity.  
*Right side.* *Left side.*

## PHRENICECTOMY.



W. S., male, aged 32, T.B. plus.  
 Ph.1(a).—Skiagram taken 19-2-34 shows right apical cavity.  
 Ph.1(b).—Skiagram taken 27-6-34 after phrenicectomy on 6-3-34 shows disappearance of cavity.  
 [Skiagrams taken at Peel Hall Pulmonary Hospital.]



The religious needs of patients likewise are well catered for. In addition to the wireless services, regular visits are paid by clergy of all denominations. The welfare of the patients depends, of course, upon the existence of a well-trained and contented staff. Suitable training is provided by means of regular lectures by the medical staff and demonstrations by matron and sister. Three of our nurses now hold the certificate of the Tuberculosis Association, and it is hoped that this will be gained by our probationers on the completion of their two years' training.

The following figures give some indication of the activities of the hospital :—

Admissions :

(a) Definite cases of pulmonary tuberculosis	...	...	...	...	117
(b) Observation cases	...	...	...	...	—
Deaths	...	...	...	...	15
Number of blood sedimentation tests carried out	...	...	...	...	182
Number of patients in hospital on 31st December, 1933, who were having special treatment :—					
Artificial pneumothorax	...	...	...	...	18
Artificial pneumothorax and phrenicectomy	...	...	...	...	3
Artificial pneumothorax and sanocrysin	...	...	...	...	2
Phrenicectomy (or recovering from the operation)...	...	...	...	...	5
Sanocrysin	...	...	...	...	3
Number of patients afforded special treatment for first time :—					

	1929	1930	1931	1932	1933
Artificial pneumothorax—					
Attempted...	21	27	46	57	36
Unsuccessful, or abandoned soon after induction	7	11	15	21	8
Satisfactory	8	12	28	34	21
Partially satisfactory	6	4	3	2	7
Persons receiving gas replacement (including cases where artificial pneumothorax was induced in previous years)	4	6	12	8	7
Phrenicectomy	—	—	14	26	17
Sanocrysin	19	10	13	7	8
Lipiodol	6	—	3	—	—

### SUMMARY OF DISPENSARY WORK.

Number of tuberculous cases under supervision on 31st December, 1933  
(Definitely tuberculous, 1,587 ; doubtful, 0.) ... .. 1,587

Examinations by tuberculosis officer at—	Examinations of new persons and new contacts for diagnosis.	Re-visits or re-attendances of " old " cases and " old " contacts.
Patients' homes	171	978
Leigh Chief Dispensary	206	851
Eccles Branch Dispensary	286	1,822
Farnworth Branch Dispensary	120	482
Pendlebury Branch Dispensary	68	470
Stretford Branch Dispensary	159	572
	839	4,197

Attendances of patients at the Eccles Dispensary for artificial light treatment ... ..	5,432
Attendances for artificial pneumothorax treatment (47 individual patients)	619
Care committee meetings attended by—	
(a) Tuberculosis officers ... ..	33
(b) Tuberculosis health visitors ... ..	54
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals ... ..	59
Special visits by tuberculosis officers ( <i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.) ... ..	28
Visits by dispensary nurses to patients' homes—	
Routine visits ... ..	9,210
Actual nursing ... ..	183
Application of surgical dressings ... ..	222
Adjustment of splints and surgical appliances ... ..	283
	9,898
Patients' dispensary attendances for attention by nurses—	
Application of surgical dressings ... ..	486
Adjustment of splints and surgical appliances ... ..	91
	577
Sanitary defects reported to the local medical officers of health ... ..	30
Sanitary defects which after notification were remedied ... ..	18
Disinfections carried out by local sanitary authorities ... ..	600
New cases referred by medical practitioners, Pensions authorities, &c., to tuberculosis officer for an opinion as to diagnosis or treatment ... ..	694
Sputum examinations—	
Total number of specimens examined ... ..	2,314
Number where tubercle bacilli were found ... ..	464
Number of specimens sent by medical practitioners ... ..	274
Number of these where tubercle bacilli were found ... ..	24
Care work—	
Number of patients assisted by care committees and tuberculosis sections of civic guilds of help ... ..	187
Amount expended ... ..	£347/11/11
Number of patients assisted from County care fund ... ..	53
Amount expended ... ..	£51/3/1
Contacts—	
Number of selected persons examined ... ..	226
Number of cases of tuberculosis found ... ..	9
X-ray work—	
Skiagrams—pulmonary 1170, non-pulmonary 124* ... ..	1,294
Screenings ... ..	728

\* Spine 46, hip 27, knee 14, foot 12, ankle 6, elbow 4, hand 4, shoulder 3, pelvis 3, leg 3, arm 1, wrist 1.



XXII.—REPORT FOR DISPENSARY AREA No. 5  
(including Rufford Pulmonary Hospital).

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Area (estimated population 257,212) embraces West Lancashire Rural, Great Crosby, Waterloo-with-Seaforth, Litherland, Newton-in-Makerfield, Whiston Rural, Warrington Rural, and Widnes districts.

Consultant Tuberculosis Officer ... DR. C. W. LAIRD.  
(Dr. Laird is also visiting medical superintendent of the Rufford  
Pulmonary Hospital.)

Assistant Tuberculosis Officers ... DR. C. H. LILLEY and  
DR. W. FETTES (from 1/10/34).  
(2 days per week).

Dr. Laird reports :—

During 1933 the administration of the area and the treatment carried out differed little, if at all, from that of recent years.

The chief dispensary at Seaforth served, as hitherto, as a centre for radiological examinations, in addition to being used for ordinary supervision and for clinical examination of patients new and old. Here too, artificial pneumothorax refills have been given to patients living in various parts of the area, with the exception of a few resident in the vicinity of Rufford Hospital where also facilities for this work are provided.

The number of specimens of sputum examined totalled 984, of which 230 were positive. The skiagrams taken numbered 756, and 408 screen examinations were made. The number of artificial pneumothorax refills given at Seaforth was 401, there being 43 individual patients in receipt of this form of treatment. In addition, the following work was, for the convenience of patients living in the districts around the Rufford Pulmonary Hospital, carried out at that institution :— 21 artificial pneumothorax refills were given to three individual patients, 57 skiagrams were taken, and 88 screen examinations made.

At St. Helens Dispensary is situated the light centre for the whole of Area No. 5, and its activities were mainly concerned with ultra-violet ray therapy, though once a week an ordinary clinic for diagnosis and supervision was held as well ; in conformity with other centres, a special session was arranged on one evening each month to suit patients whose work prevented attendance at other times.

At Widnes the dispensary was used for diagnosis, observation, and supervision, and numerous surgical dressings were done at and between ordinary sessions. Meetings of the local care committee were held in the dispensary as required. Plans for a new dispensary, which

is to form part of the Widnes Corporation's public health unit, have been under consideration, and it is hoped that one day better accommodation may be available.

The various care committees continued to carry out most useful work in their respective districts by supplying provisions to necessitous patients and, in certain cases, enabling them to proceed to institutions by helping to provide the necessary clothing. The members of the Widnes Care Committee took the opportunity of visiting Rufford Hospital during the year, and learning, at first hand, details of treatment as carried out in an open-air institution. The visit appeared to be a very enjoyable one, and was no doubt instructive as well. Particulars of care committee work at Prescot, Earlestown, Widnes, and Huyton may be found by reference to the chapter dealing with this subject. I should like, on behalf of the dispensary organisation, to express my very great appreciation of the efforts made by these committees, and to say once again how thoroughly the County authorities approve of their work.

#### ARTIFICIAL LIGHT TREATMENT.

An artificial light centre was established in Area No. 5 at the St. Helens Dispensary on the 16th January, 1928.

As regards the type of case treated and the equipment for giving treatment, no change is to be recorded from the reports of previous years. The exposures given have, on the whole, been very similar also to those in use last year. It will be noted that the only type of carbon employed is the iron-impregnated one with which the duration of exposure is, of course, very much shorter than when the white-flame type is used.

It would seem that the type of case which derived most benefit was that of adenitis without softening in children ; this type represents over a third of the total number of cases ceasing treatment on account of quiescence. It is noteworthy that 10 cases of lupus, in which the duration of the disease was of considerable length, were able to end treatment owing to inactivity of the disease. Of the patients attending, only six constituted cases of relapse ; in three of these the relapse took place within one year, in two others it occurred within about 18 months, and in the sixth case after a period of four years.

The occurrence of pigmentation concurrently with treatment was comparatively rare, and was in no instance very marked.

Attendances on the whole were good, travelling expenses being paid by the County Council in some 75 per cent. of the total.



The following Table 33 shows the results for patients treated at this centre during 1933 :—

*St. Helens Centre.*

Form of tuberculosis or part of body affected.	Number of cases treated during 1933.	Condition of patients whose treatment concluded in 1933.				Ceased treatment for other reasons.*	Still under treatment at end of 1933.
		Quiescent and apparently well.	Improved.	Stationary.	Worse.		
Skin ... ..	36	10	1	1	—	4	20
Adenitis with abscess formation and skin involvement ... ..	16	8	2	—	—	3	3
Adenitis without softening ... ..	30	15	6	—	—	5	4
Bones, joints, and spine ... ..	9	—	—	1	—	3	5
Abdomen ... ..	2	1	—	—	—	—	1
TOTAL ... ..	93	34	9	2	—	15	33

\* Includes: (1) Patients who did not receive two months' treatment; (2) patients ceasing light treatment prematurely (*e.g.*, removals, unwilling or unable to continue); and (3) patients transferred to sanatoria or hospitals.

**RUFFORD PULMONARY HOSPITAL, NEAR ORMSKIRK.**

*Matron* ... MISS A. JONES (to 6/8/34).

MISS S. HOLMES (from 7/8/34).

The County Council acquired, on the 18th October, 1920, Rufford New Hall, situated on the west side of the main road from Preston to Ormskirk, together with 128 acres of land adjoining the Hall. Under pressure from the Ministry of Health, a scheme was prepared for using the Hall and land for discharged sailors and soldiers, which included training the patients in several occupations. Some additional land was also obtained with a view to training in agricultural work, but all this, however, was abandoned in 1921 by order of the Ministry of Health, owing to financial stringency. The premises, first used as a pulmonary hospital on the 7th April, 1926, provide accommodation for 52 female patients.

The hospital serves as far as possible the districts in West Lancashire, so that relatives and friends will have reasonable facilities for visiting.

A motor ambulance has been provided, available for the hospital and also for conveying County patients to or from other hospitals.

The average length of stay of patients at Rufford during 1933 was as under :—

Patients discharged ... ..	156 days.
Patients who died in the hospital ... ..	96 days.

Dr. Laird reports as follows on matters relating to the treatment of patients and the administration of the hospital :—

The number of patients admitted during 1933 was 134, 120 were discharged, and 16 died in the institution. The disease was considered to be quiescent in 10 of the 120 discharged, but it remained active in 110, as might be expected in pulmonary hospital cases. This does not imply, however, that improvement, and often striking improvement, had not taken place in a majority of those discharged. In four, the working capacity was fully restored, and in only 51 was it regarded as negligible. In this connection it is to be remembered not only that better isolation of infective persons was secured, with greater protection for those remaining in the home and corresponding benefit to the community itself, but also in many instances skilled care and nursing attention were provided for those who could not obtain them in their own surroundings. Many had experienced sanatorium treatment on one or more occasions before coming to Rufford, and it is perhaps due to the greater proportion of re-admissions and to the decision to admit only positive sputum cases, or such as present unequivocal signs or radiological appearances of tuberculosis, that the standard of physical condition seems on the whole to have deteriorated in recent years. Figures giving the numbers of " bed cases " from month to month would seem to confirm the presence of a greater number of cases of an advanced type by showing a persistent rise and maintenance at a higher level than formerly. The young adult still figures prominently in the list, the majority of the patients being girls between 18 and 25.

Special methods employed in treatment consisted chiefly in the use of artificial pneumothorax and sanocrysin, or a combination of both. As regards the latter, my experience has not been sufficient to justify an expression of opinion, but it may be said that in the comparatively small number of cases in which sanocrysin has been given the immediate results have been mainly satisfactory and no serious reaction has occurred. My colleague, Dr. Bradbury, from the limited material at his disposal in the form of clinical notes and skiagrams relating to artificial pneumothorax inductions in Rufford prior to 1933, has conducted a painstaking investigation with a view to determining, if possible, how much value may be attached to this line of treatment. In doing so he has approached the subject impartially and has considered it from various angles with a strict regard to facts. His conclusions are to be found on pages 32 and 33.

Apart from statistical findings, one derives a modicum of comfort from the increased feeling of well-being so frequently produced by artificial pneumothorax in those who have felt themselves sinking ; by the outward and visible signs of improvement in the general con-



dition ; by the often dramatic disappearance of pyrexia ; by the return of energy ; and, in general, by the partial, if fleeting, restoration to comparative health which makes existence tolerable. With sanocrysin as an adjunct to artificial pneumothorax, it is possible that more lasting improvement can be obtained. Certainly one hears of patients who favour sanocrysin more than pneumothorax after personal trial of both, and who hanker after a second or third course of the former with what one may fittingly describe as an *auri sacra fames*. There is little doubt, at any rate, that both measures have proved to be of value and have marked a distinct advance in the treatment of tuberculous disease.

In the course of the year, artificial pneumothorax was induced in 22 cases and the number of refills given was 296. In four cases the attempt to effect an induction was unsuccessful. On the 31st December, 1933, eleven patients were in receipt of this form of treatment, one was having sanocrysin in addition, and three were receiving sanocrysin without therapeutic collapse of the lung. Gas replacements were carried out in the case of four patients who had pleural effusion, and numbered ten in all. One patient had such replacement on five occasions, two others on two occasions each, and the fourth patient had one only.

Blood sedimentation rate was tested in the case of certain patients who were undergoing special forms of treatment, but the test was not in operation throughout the year.

X-ray examinations of hospital patients numbered 1,111, of which 913 were radiosopic merely, while in 198 cases skiagrams were taken as well. The use of paper films was adopted to a limited extent as being more economic and in some cases sufficient for the purpose of preserving records of progress under treatment.

Dental extractions were carried out in numerous instances in the theatre under local anæsthesia.

Patients according to their fitness were assigned light duties by way of occupational therapy. These take the form of cleaning silver, polishing brass-work, peeling potatoes, mending of bed-linen, arranging of flowers, care of library, etc. Their recreations included croquet, concerts, cinema shows, whist drives, dramatic sketches, and country walks. A modern wireless set has been installed and loudspeakers are to be found in all the wards.

Religious services were held periodically by the Rev. H. H. Hall, the Rev. A. Brett, late of Upholland, and the Rev. Fr. Ryan ; special visits were paid by each of these gentlemen as required. I desire to make due acknowledgment of their kindly ministrations.

The usual lectures were given by me to those of the nursing staff who proposed to take the examination of the Tuberculosis Association. The subjects dealt with were anatomy, physiology, bacteriology, and hygiene.

A meeting of the Tuberculosis Committee of the County Council was held at the hospital on the 21st June, 1933, followed by a general inspection of the building and the grounds. Visits were also paid during the year by County Councillor W. J. Lucas on the 19th April; by Dr. H. Terada, from the Prefectural Office, Yokohama, on the 17th June; and by the ladies who constitute the Widnes Care Committee on the 18th May.

The x-ray plant was brought up-to-date by the installation of a modern set working off a monovalve transformer, and incorporating a teletechnique stand for screening and radiography, fitted with a new type of 10 k.w. Metalix tube and a stereoscopic attachment, with vertical shift, operating automatically after an initial exposure. The set was supplied by Messrs. Newton and Wright, of London.

Improvements in the culinary department include not only the introduction of electric cooking, but also the provision of an electric dish-washer.

Thanks are tendered to the Red Cross Society and to private donors for gifts of books and periodicals as heretofore. Our indebtedness to the Chairman and members of the Tuberculosis Committee for an annual grant towards Christmas fare and the provision of various amenities must be emphasized, apart from our obligation for several improvements sanctioned by them in the equipment of the hospital.

I have pleasure in again paying tribute to the cordial co-operation of Miss Jones, the matron, and her nursing staff, in the management of the institution.

#### SUMMARY OF DISPENSARY WORK.

Number of tuberculous cases under supervision on 31st December, 1933

(Definitely tuberculous, 1,047; doubtful, 7.) ... .. 1,054.

Examinations by tuberculosis officer at—					Examinations of <i>new persons</i> and <i>new contacts</i> for diagnosis.	Re-visits or re-attendances of " <i>old</i> " cases and " <i>old</i> " <i>contacts</i> .
Patients' homes	...	...	...	...	159	633
Seaforth Chief Dispensary	...	...			282	1,425
St. Helens Branch Dispensary	...	...			107	690
Widnes Branch Dispensary	...	...			174	888
					563	3,003



Attendances of patients at the St. Helens Dispensary for artificial light treatment ... ..	3,365
Attendances for artificial pneumothorax treatment (46 individual patients)	422
Care committee meetings attended by—	
(a) Tuberculosis officers ... ..	3
(b) Tuberculosis health visitors ... ..	30
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals ... ..	79
Special visits by tuberculosis officers ( <i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.) ... ..	16
Visits by dispensary nurses to patients' homes—	
Routine visits ... ..	4,207
Actual nursing ... ..	23
Application of surgical dressings ... ..	250
Adjustment of splints and surgical appliances ... ..	204
	4,684
Patients' dispensary attendances for attention by nurses—	
Application of surgical dressings ... ..	484
Adjustment of splints and surgical appliances ... ..	117
	601
Sanitary defects reported to the local medical officers of health ... ..	58
Sanitary defects which after notification were remedied ... ..	36
Disinfections carried out by local sanitary authorities ... ..	350
New cases referred by medical practitioners, Pensions authorities, &c., to tuberculosis officer for an opinion as to diagnosis or treatment ...	567

## XXIII.—REPORT FOR FURNESS DISPENSARY SUB-AREA.

Area (estimated population, 38,355) embraces Dalton-in-Furness, Grange-over-Sands, Ulverston, and Ulverston Rural districts.

Consultant Tuberculosis Officer ... DR. GEORGE LEGGAT.

(Dr. Leggat is also medical superintendent of the High Carley and Oubas House Sanatoria.)

Dr. Leggat sends the following report :—

The cordial co-operation between the medical practitioners in this area and the tuberculosis staff, which in the past has been most noticeable, still continues. During the year 92·8 per cent. of the new cases (excluding contacts) examined were sent to me for an opinion before being notified.

The number of new cases and contacts examined during 1933 was 157; of these 51 were diagnosed as tuberculous, 105 as non-tuberculous, and at the end of the year one case still remained doubtful.

During the year, 222 skiagrams were taken and 18 screen examinations made at High Carley in regard to dispensary patients.

The examination of sputum, as in previous years, was carried out at High Carley; 96 specimens were examined, 15 of which were positive for tubercle bacilli and 81 negative.

Eighteen individuals were assisted during the year through the County care fund, the amount expended being £24 6s. 10d.

The new dispensary was opened in March, 1933, and is a great improvement on the old premises. It is particularly popular with the patients, and the distance from the centre of the town has not been found at all inconvenient. There is now ample room for the giving of artificial light treatment, and the exceptionally quiet neighbourhood is a great asset in examining patients.

## ARTIFICIAL LIGHT TREATMENT.

An artificial light centre was established at the Ulverston Dispensary on the 5th June, 1928.

The following Table 34 shows the results for patients treated at this centre during 1933 :—



*Ulverston Centre.*

Form of tuberculosis or part of body affected.	Number of cases treated during 1933.	Condition of patients whose treatment concluded in 1933.				Ceased treatment for other reasons. *	Still under treatment at end of 1933.
		Quiescent and apparently well.	Improved.	Stationary.	Worse.		
Skin ... ..	5	—	—	—	—	2	3
Adenitis with abscess formation and skin involvement ... ..	15	10	—	—	—	2	3
Adenitis without softening ... ..	9	2	—	—	—	2	5
Bones, joints, and spine ... ..	3	1	—	—	—	1	1
Abdomen ... ..	3	1	—	—	—	—	2
Other non-pulmonary conditions ... ..	1	—	—	—	—	—	1
Pulmonary and non-pulmonary combined:—							
† T.B. plus and elbow ... ..	1	—	—	—	—	1	—
† T.B. plus and abscess chest ... ..	1	—	—	—	—	—	1
<b>TOTAL</b> ... ..	<b>38</b>	<b>14</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>8</b>	<b>16</b>

\* Includes: (1) Patients who did not receive two months' treatment; (2) patients ceasing light treatment prematurely (*e.g.*, removals, unwilling or unable to continue); and (3) patients transferred to sanatoria or hospitals.

† Treatment for non-pulmonary condition only.

**SUMMARY OF DISPENSARY WORK.**

Number of tuberculous cases under supervision on 31st December, 1933

(Definitely tuberculous, 256; doubtful, 1.) ... .. **257**

Examinations by tuberculosis officer at—	Examinations of <i>new persons</i> and <i>new contacts</i> for diagnosis.	Re-visits or re-attendances of " <i>old</i> " cases and " <i>old</i> " contacts.
Patients' homes ... ..	40	54
Ulverston Dispensary ... ..	117	376
Attendances of patients at the Ulverston Dispensary for artificial light treatment ... ..		1,226
Attendances for artificial pneumothorax treatment (1 individual patient) ... ..		12
Visits by tuberculosis officer to sanatoria, and pulmonary and special hospitals ... ..		13
Visits by dispensary nurse to patients' homes—		
Routine visits ... ..		1,994
Actual nursing ... ..		30
Application of surgical dressings ... ..		8
Adjustment of splints and surgical appliances ... ..		12
Patients' dispensary attendances for attention by nurse—		
Application of surgical dressings ... ..		4
Sanitary defects reported to local medical officers of health ... ..		2
Sanitary defects which, after notification, were remedied ... ..		—
Disinfections carried out by local sanitary authorities ... ..		65
New cases referred by medical practitioners, Pensions authorities, &c., to tuberculosis officer for an opinion as to diagnosis or treatment ... ..		116

## XXIV.—REPORT FOR FYLDE DISPENSARY SUB-AREA.

Area (estimated population, 66,312) embraces Fleetwood, Thornton Cleveleys, Fylde Rural, Garstang Rural (part), and Kirkham districts. Lytham St. Annes is being transferred from Area No. 1 to the Fylde Sub-Area on 1/10/34.

Consultant Tuberculosis Officer ... DR. G. BARKER CHARNOCK.  
(Dr. Charnock is also medical superintendent of the Elswick Sanatorium.)

Assistant Tuberculosis Officer ... DR. W. FETTES. (from 1/10/34).  
(1½ days per week).

Dr. Charnock reports :—

The dispensary which serves the northern part of the Fylde Sub-Area is situated in Fleetwood and is conveniently reached from Thornton Cleveleys and Over Wyre. The accommodation is suited to the needs of the area.

The Elswick Dispensary, which is situated at the sanatorium and serves the southern part of the area, was established during the year. The health visitor for the area attends both these centres. At the Elswick Dispensary facilities are given to the nursing staff of the institution to attend on out-patient days, thus giving the hospital staff an introduction to dispensary routine.

The organisation has worked smoothly, largely due to the help and good co-operation of medical colleagues in general medical practice. This is hereby gratefully acknowledged. Much assistance has been received from all the sanitary authorities in connection with notifications, disinfections, and storage and erection of shelters.

The care fund has been very helpful in assisting necessitous cases, particularly with respect to the provision of clothing to enable them to proceed to hospital. During the year, 11 cases were assisted.

The administrative office is situated at Elswick and serves the area and the sanatorium. Artificial pneumothorax cases attend at Elswick for refills. The x-ray and laboratory investigations are also centralised at the sanatorium. The number of skiagrams taken of dispensary cases during 1933 was 257, and the screenings numbered 69. The sputum tests undertaken were exactly 200, of which 30 were found to be positive.

The scheme whereby the consultant tuberculosis officer has both the district and the sanatorium under his control works well in this area. The centralising of administration, investigation, and treatment, adds to the convenience of working, and is economical of time and energy. Patients from the area can, for the most part, be accommodated at Elswick Sanatorium, which they appear to prefer since it is near their homes and relatives.



## ARTIFICIAL LIGHT TREATMENT.

An artificial light centre was established in the Fylde Sub-Area at the Fleetwood Dispensary on the 25th June, 1928.

The accommodation consists of light room with carbon arcs, dressing room with curtained cubicles, a waiting room, and a surgical room where the Kromayer lamp is applied and where minor surgical work is undertaken and dressings are done.

The patients have co-operated happily, and their attendances at the light centre have been very good. The current used is taken from the public supply. Physical and radiological examinations are made prior to radiation, and photographic records are kept.

The types of cases treated include lupus, cervical adenitis with and without abscess formation, peritonitis, and Bazin's disease. The plant consists of two carbon arcs, using both A and C carbons, together with a Kromayer lamp. Adjuvant measures, as adopted in previous years, have been continued as follows: Aspirations, "puncture and seal," scraping, curetting under local anæsthesia, splinting of head and shoulder girdle in cervical adenitis, removal of keloids, plasters, acid nitrate of mercury under borocaine, and zinc gelatine for Bazin's disease.

The following Table 35 shows the results for patients treated at this centre during 1933 :—

*Fleetwood Centre.*

Form of tuberculosis or part of body affected.	Number of cases treated during 1933.	Condition of patients whose treatment concluded in 1933.				Ceased treatment for other reasons.*	Still under treatment at end of 1933.
		Quiescent and apparently well.	Improved.	Stationary.	Worse.		
Skin ... ..	10	2	1	—	—	1	6
Adenitis with abscess formation and skin involvement ... ..	16	10	1	—	—	1	4
Adenitis without softening ... ..	19	10	2	—	1	1	5
Bones, joints, and spine ... ..	2	—	—	—	—	1	1
Abdomen ... ..	1	—	—	—	—	—	1
Other non-pulmonary conditions ... ..	1	—	1	—	—	—	—
Pulmonary and non-pulmonary combined :— †T.B. plus and bones ... ..	1	—	1	—	—	—	—
<b>TOTAL</b> ... ..	<b>50</b>	<b>22</b>	<b>6</b>	<b>—</b>	<b>1</b>	<b>4</b>	<b>17</b>

\* Includes : (1) Patients who did not receive two months' treatment ; (2) patients ceasing light treatment prematurely (*e.g.*, removals, unwilling or unable to continue) ; and (3) patients transferred to sanatoria or hospitals.

† Treatment for non-pulmonary condition only.

## SUMMARY OF DISPENSARY WORK.

Number of tuberculous cases under supervision on 31st December, 1933  
(Definitely tuberculous, 370 ; doubtful, 0.) ... ..

					Examinations of <i>new persons</i> and <i>new contacts</i> for diagnosis.	Re-visits or re-attendances of " <i>old</i> " cases and " <i>old</i> " <i>contacts</i> .	
Examinations by tuberculosis officer at—							
Patients' homes	...	...	...	...	69	243	
Fleetwood Dispensary	...	...	...	...	130	749	
Elswick Dispensary	...	...	...	...	37	132	
					167	881	
Attendances of patients at the Fleetwood Dispensary for artificial light treatment					...	...	1,289
Attendances for artificial pneumothorax treatment (8 individual patients)							60
Visits by tuberculosis officer to sanatoria, and pulmonary, special, and public assistance hospitals					...	...	7
Special visits by tuberculosis officer ( <i>i.e.</i> , interviews with medical officers of health, general hospital officials, etc.)					...	...	2
Visits by dispensary nurse to patients' homes—							
Routine visits	...	...	...	...	...	1,524	} 1,939
Actual nursing	...	...	...	...	...	26	
Application of surgical dressings	...	...	...	...	...	344	
Adjustment of splints and surgical appliances	...	...	...	...	...	45	
Patients' dispensary attendances for attention by nurse—							
Application of surgical dressings	...	...	...	...	...	191	} 193
Adjustment of splints and surgical appliances	...	...	...	...	...	2	
Sanitary defects reported to local medical officers of health					...	...	1
Sanitary defects which after notification were remedied					...	...	1
Disinfections carried out by local sanitary authorities					...	...	43
New cases referred by medical practitioners, Pensions authorities, &c., to tuberculosis officer for an opinion as to diagnosis or treatment					...	...	205



## XXV.—REPORT FOR WIGAN COUNTY SUB-AREA.

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Area (estimated population 109,280) embraces Ashton-in-Makerfield, Hindley, Ince-in-Makerfield, and Wigan Rural districts.

Consultant Tuberculosis Officer ... DR. E. H. ALLON PASK.

(Dr. Pask is also medical superintendent of the Wrightington Hospital.)

Assistant Tuberculosis Officer ... DR. J. EDGAR WALLACE.

Dr. Pask reports :—

During 1933 co-operation with the medical practitioners in the area has been maintained.

New persons seen during the year numbered 461 as against 426 during 1932, an increase of 35.

Compared with 1932, an analysis of the figures for 1933 shows that : 17 fewer cases of pulmonary tuberculosis and 15 more cases of non-pulmonary tuberculosis were taken on the register, 36 more non-tuberculous cases were seen, and one more case remained undiagnosed at the end of the year.

Although more cases have been referred to us, it is gratifying to note that the largest increase in figures has occurred in the number of non-tuberculous cases seen. This fact is very encouraging, as it shows that the medical attendants are realising the importance of eliminating tuberculosis by a complete investigation of suspicious signs and symptoms, and the patients themselves are submitting more readily to this course.

The Wigan County District Care Committee has during 1933 done most useful work, and £96 19s. 2d. has been expended to assist 67 deserving cases.

The laboratory work for the area is undertaken at the Wrightington Hospital, and during the year 723 specimens (positive 134, negative 589), were examined, an increase of 165 specimens on the total for 1932.

The x-ray examinations for the area are also made at the Wrightington Hospital; patients assemble at the dispensary and are conveyed to the institution in the hospital ambulance, an arrangement which works very satisfactorily. During 1933, 487 skiagrams and 331 screen examinations (818 in all) were dealt with—an increase of 77 on the total for 1932.

During the year, 25 lipiodol injections have been made; the methods employed were described in detail in last year's annual report. I would stress the usefulness of this procedure for diagnostic purposes and the fact that the persons injected were treated as out-patients, thus obviating the necessity for occupying beds in institutions.

Comparison with last year's report will reveal that there is an all-round increase in x-ray work, sputum examinations, and the attendances of new persons.

The greater part of the artificial pneumothorax work of the area is now done at the Wigan Dispensary, the patients being periodically x-rayed at Wrightington Hospital.

The Wigan Sub-Area has always shown a large proportion of non-pulmonary cases to pulmonary cases.

In May, 1933, an analysis was made of the patients on the dispensary register who were suffering from (a) pulmonary and non-pulmonary tuberculosis (combined) and (b) non-pulmonary tuberculosis. The number of patients dealt with was 406 (combined 31, non-pulmonary 375) and in 128, or 31·5 per cent., there was a definite family history of tuberculosis. An enquiry by the tuberculosis health visitors as to the source of the milk supply in these 128 cases revealed that in 78, or 60·9 per cent., fresh milk was not consumed; in most instances tinned milk was used. These figures tend to confirm the findings of Dr. Bradbury's investigation on Tyneside, that fresh milk is not consumed in a large number of homes of patients suffering from tuberculosis.

#### ARTIFICIAL LIGHT TREATMENT.

An artificial light centre was established at the Wigan Dispensary on the 31st May, 1929.

The following notes have been compiled by Dr. J. Edgar Wallace who supervises the treatment at this centre :—

The following conditions were treated at the Wigan Dispensary Light Clinic during 1933 :—Lupus, tuberculous adenitis (with and without abscess formation) erythema nodosum, tuberculous peritonitis, and tuberculous osteitis with sinuses.

Both grade A and grade C carbons are at present being used for general light baths, as a comparison between the two is being attempted. The maximum dosage with grade A carbons is one hour, and with grade C carbons 20 minutes. The rate at which a new patient reaches the full exposure has been speeded up, and is arranged so that the maximum is attained after 10 visits.

If any reaction occurs, however slight, the exposure is reduced to the one before that causing the reaction.

The method of giving occasional "rests" from general light treatment has been continued with beneficial results.

The treatment of tuberculous adenitis forms the greater part of the work and it is found that artificial light therapy together with minor procedures, such as aspiration, incision and curettage, is usually sufficient to effect quiescence.

Admission to hospital for radical excision has rarely to be advised.

A number of lupus patients ceased light treatment during the year in order to undergo a course of moogrol injections. A special report on these cases forms the subject of Chapter VIII.



The following Table 36 shows the results for patients treated at this centre during 1933 :—

*Wigan Centre.*

Form of tuberculosis or part of body affected.	Number of cases treated during 1933.	Condition of patients whose treatment concluded in 1933.				Ceased treatment for other reasons.*	Still under treatment at end of 1933.
		Quiescent and apparently well.	Improved.	Stationary.	Worse.		
Skin ... ..	32	2	—	—	—	3	27
Adenitis with abscess formation and skin involvement ... ..	15	8	—	—	—	1	6
Adenitis without softening ... ..	44	8	1	1	1	—	33
Bones, joints, and spine ... ..	3	—	—	1	—	—	2
Abdomen ... ..	3	2	—	—	—	—	1
<b>TOTAL</b> ... ..	<b>97</b>	<b>20</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>69</b>

\* Includes: (1) Patients who did not receive two months' treatment; (2) patients ceasing light treatment prematurely (*e.g.*, removals, unwilling or unable to continue); and (3) patients transferred to sanatoria or hospitals.

**SUMMARY OF DISPENSARY WORK.**

Number of tuberculous cases under supervision on 31st December, 1933  
(Definitely tuberculous, 719 ; doubtful, 9.) ... .. **728**

Examinations by tuberculosis officer at—				Examinations of new persons and new contacts for diagnosis.	Re-visits or re-attendances of "old" cases and "old" contacts.
Patients' homes ... ..	...	...	...	137	376
Wigan Dispensary ... ..	...	...	...	324	1,860
Attendances of patients at the Wigan Dispensary for artificial light treatment ... ..	...	...	...	...	3,559
Attendances for artificial pneumothorax treatment (9 individual patients)	...	...	...	...	105
Care committee meetings attended by—	...	...	...	...	...
(a) Tuberculosis officers ... ..	...	...	...	...	13
(b) Tuberculosis health visitors ... ..	...	...	...	...	24
Lectures or addresses given ... ..	...	...	...	...	2
Visits by tuberculosis officers to sanatoria, and pulmonary, special, and public assistance hospitals ... ..	...	...	...	...	29
Special visits by tuberculosis officers ( <i>i.e.</i> , interviews with medical officers of health, general hospital officials, &c.) ... ..	...	...	...	...	2
Visits by dispensary nurses to patients' homes—	...	...	...	...	...
Routine visits ... ..	...	...	...	...	2,696
Actual nursing ... ..	...	...	...	...	7
Application of surgical dressings ... ..	...	...	...	...	61
Adjustment of splints and surgical appliances ... ..	...	...	...	...	151
Patients' dispensary attendances for attention by nurses—	...	...	...	...	...
Adjustment of splints and surgical appliances ... ..	...	...	...	...	3
Sanitary defects reported to the local medical officers of health ... ..	...	...	...	...	17
Sanitary defects which after notification were remedied ... ..	...	...	...	...	8
Disinfections carried out by local sanitary authorities ... ..	...	...	...	...	142
New cases referred by medical practitioners, Pensions authorities, &c., to tuberculosis officer for an opinion as to diagnosis or treatment ... ..	...	...	...	...	326

## XXVI.—CARE WORK.

The County care scheme was fully reviewed in the report for 1928, and as there has not been any further development, it is not proposed to recapitulate.

TABLE 37.—*Work done by voluntary care committees.*

Name of committee.	Estimated population served 1933.	Number of individual patients assisted during 1933.	Expenditure on patients during 1933.
			£ s. d.
Ashton-under-Lyne and District...	68,202	70	238 16 3
Chorley and District ... ..	70,844	46	251 12 1
Earlestown, Newton and District ...	22,596	22	78 7 10
Egerton, Eagley, Dunscar and District...	5,623	2	3 7 4
Farnworth and District ... ..	66,722	27	78 14 8
Golborne ... ..	14,095	8	17 2 0
Horwich ... ..	15,320	29	178 19 3
Huyton-with-Roby District ... ..	5,629	5	31 17 10
Lancaster and District ... ..	89,877	23	206 1 5
Leigh and District... ..	84,770	94	111 2 1
Prescot and District ... ..	23,132	11	79 19 9
Prestwich ... ..	26,100	4	3 9 0
*Radcliffe, Whitefield and District Relief Fund for Consumptives ...	37,391	18	158 15 10
Stretford Civic Guild of Help ... ..	57,230	41	105 14 8
Westhoughton ... ..	15,820	17	34 18 6
Widnes ... ..	41,380	47	101 17 7
Wigan County District ... ..	109,280	67	96 19 2
TOTAL ... ..	754,011	531	£1,777 15 3

\* Relates to year ended 31st March, 1934.

The County Council has continued to make a grant of  $33\frac{1}{3}$  per cent. of the committees' expenditure on actual assistance to patients.

The following visits of voluntary care committees to County sanatoria and hospitals have taken place:—

Ashton-under-Lyne and District Care Committee	Wrightington Hospital	30th May, 1933
Horwich Care Committee ...	Wrightington Hospital	24th June, 1933
Widnes Care Committee ...	Rufford Pulmonary Hospital.	18th May, 1933
Farnworth and District Care Committee	Peel Hall Pulmonary Hospital.	19th Aug., 1933

The County Tuberculosis Committee encourage these visits as they enable the members of the care committees to see at first hand the institutional side of the scheme.



The voluntary care committees cover less than half the County, and there is left a balance of over 1,000,000 persons to be dealt with by other means, pending the formation of new voluntary committees. In the areas without care committees the County Council have charged the tuberculosis dispensary staff with the duty of carrying out the relief work. During 1933, assistance in kind was afforded through the dispensary staff to 246 individual patients, the amount expended being £562 13s. 1d.

With the transfer of the Poor Law functions to the County Council, arrangements have been made to continue co-operation with the Public Assistance Committee and their Guardians Committees so as to prevent overlapping in rendering assistance in necessitous or destitute cases.

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## XXVII.—COUNTY SANATORIA AND HOSPITALS.

## (1) HIGH CARLEY SANATORIUM, NEAR ULVERSTON.

*Medical Superintendent* ... .. DR. GEORGE LEGGAT.

(Dr. Leggat is also visiting medical superintendent of Oubas House Children's Sanatorium, Ulverston, and consultant tuberculosis officer for the Furness Dispensary Sub-Area—i.e., the area around the sanatorium—containing a population of 38,355.)

*Visiting Consulting Chest Surgeon* ... MR. H. MORRISTON DAVIES.

*Assistant Medical Superintendent* ... DR. W. FETTES (to 30/9/34.)

*Matron* ... .. MISS E. WOOSEY.

(The matron is also responsible for the Oubas House Children's Sanatorium, Ulverston.)

High Carley Sanatorium is situated about three miles west of Ulverston, to the south of the main road to Barrow-in-Furness. The buildings stand in 23 acres of ground, and accommodation is provided for 118 patients (60 males and 58 females) in 37 double cubicles, 4 single cubicles, 5 six-bed wards, and 5 double sleeping shelters.

The medical superintendent and the assistant are accommodated on the estate; and seven houses are provided in the vicinity of the sanatorium for the male employees.

Since 1929, electricity has been obtained from the public supply in replacement of the sanatorium plant.

A treatment block was built in December, 1932, and contains on the ground floor an operating theatre, waiting and anæsthetic room, sterilising room, recovery room, artificial light room with a room adjoining for the sister, laboratory, x-ray room and dark room; on the first floor five bedrooms and a sick room are provided for the staff.

Mr. H. Morriston Davies, M.D., M.Ch., F.R.C.S., was appointed visiting consulting chest surgeon and made his first visit to the sanatorium on the 21st January, 1933.

During the year, 173 County patients received from the visiting dental surgeon, Mr. A. Miller, some form of dental treatment, particulars of which will be found in Chapter XXVIII.

The average length of stay of patients at High Carley during 1933 was as under :—

Patients discharged	...	...	...	...	233 days.
Patients who died in the sanatorium	...	...	...	...	135 days.
Observation cases	...	...	...	...	54 days.



Dr. Leggat reports as follows on matters relating to the treatment of the patients and the administration of the sanatorium :—

Treatment has been carried out much as in previous years with perhaps more extensive use of surgical methods, due to the facilities provided for this type of work by the opening of the new treatment block and operating theatre at the end of 1932.

The number of patients in the institution on the 31st December, 1933, who were undergoing special treatment was as follows :—

Artificial pneumothorax	...	...	...	...	...	19
Artificial pneumothorax and gold	...	...	...	...	...	2
Phrenicectomy (or recovering from the operation)	...	...	...	...	...	2
Artificial light	...	...	...	...	...	14
Phrenicectomy and gold	...	...	...	...	...	1
Gold	...	...	...	...	...	18

*Artificial pneumothorax.* There were 31 patients continuing this form of treatment from the previous year; during 1933, there were 52 successful inductions and 8 failures, 50 per cent. of the former developing fluid, varying from a puddle upwards. Of the 83 cases in which a successful induction had been obtained, treatment was abandoned in 25 cases for the following reasons :—Fluid 9, fluid and spread into contra-lateral lung 2, unsuccessful oscillation 3, unsatisfactory collapse 5, obliterative pleurisy 1, left for other than medical reasons 1, died 4.

Thirty-one patients completed the treatment, and 27 were continuing at the end of the year. Of the 31 cases completing treatment, 24 had a positive sputum on commencement; 11 of these became negative, giving a bacillary loss of 45·8 per cent.

The number of refills for the sanatorium patients alone was 1,174.

*After-histories of 141 cases in which artificial pneumothorax was attempted during the three years 1930, 1931 and 1932.* During the years 1930–32, artificial pneumothorax was attempted on 141 patients whose sputum was positive at the commencement of treatment.

Ten cases removed from the County area during this period and reduced the traceable cases to 131.

Eighty-nine of the 131 patients were successfully induced and of these, 80, or 89·9 per cent., were still alive at the end of 1933.

In 42 cases the induction failed or treatment was abandoned before the end of two months. Of these, 27, or 64·3 per cent., were still alive at the end of 1933, and 35·7 per cent. dead.

The bacillary loss in the 89 successfully induced cases was 68·7 per cent., compared with 59·2 per cent. for the 42 cases in which the induction failed or treatment was abandoned.

*Phrenicectomy and Thoracoplasty.* During the year the operation of phrenicectomy was performed on 31 patients, and thoracoplasty on 3 patients. The latter is a serious operation and has been performed by Mr. Morrision Davies, the visiting surgeon.

*Adhesions.* In three cases it was necessary to undertake the division of pleural adhesions, with a satisfactory result in one case and unsatisfactory in the other two.

*Bacillary loss.* During the year, 75 patients were admitted with a positive sputum. On discharge, the sputum in 27 of these cases had become negative, giving a bacillary loss of 36·0 per cent. A careful record of the bacillary loss has been kept for a number of years, and the average loss for the last nine years is 25·8 per cent.

*Sputum examinations.* The sputum of patients is examined as follows:—Observation cases, weekly; T.B. minus cases, fortnightly; and T.B. plus cases, monthly. During the year, 1,547 specimens of sputum were examined of which 602 were positive.

*Patients' weights.* Patients' weights are taken at weekly intervals; the average gain in weight of those who completed two or more months' treatment was:—62 male patients, 10·4 lbs.; 64 female patients, 12·9 lbs.

*X-ray examinations.* The number of skiagrams taken during the year was 1,046, compared with 1,013 for the previous year. The number of screen examinations made was 1,535, compared with 895 for the previous year. The x-rays have proved most valuable in the diagnosis of doubtful cases sent to the sanatorium.

*Nurses' examinations.* Probationer nurses are prepared for the examination held under the auspices of the Tuberculosis Association.

During the year, two nurses sat for Parts I and II, and four sat for Part II only. One nurse was successful in passing Parts I and II, one was successful in passing Part I, and three were successful in passing Part II.

*Occupational therapy.* As in previous years, the forms of occupational therapy were joinery, carpentry, wattle-hurdle making, gardening, boot repairing, poultry keeping, and cane chair mending. In the joinery department all minor repairs in connection with the institution have been carried out, and a number of wattle-hurdles have been made for the various County sanatoria. In the boot repairing department, 41 pairs of boots or shoes were repaired during the year.



The following Table 38 shows the condition of patients discharged from the High Carley Sanatorium during the year 1933 :—

Classification on admission to the sanatorium.	Condition at time of discharge.	Duration of residential treatment in the sanatorium.				Total.	
		Under 3 months.	3—6 months.	6—12 months.	More than 12 months.	No.	%
T.B. minus.	Quiescent ... ..	2	13	7	2	24	72.7
	Improved ... ..	2	1	2	—	5	15.1
	No material improvement ...	1	1	—	—	2	6.1
	Died in sanatorium ... ..	2	—	—	—	2	6.1
T.B. plus 1.	Quiescent ... ..	—	6	15	1	22	61.1
	Improved ... ..	2	2	4	1	9	25.0
	No material improvement ...	1	—	—	2	3	8.3
	Died in sanatorium ... ..	1	—	1	—	2	5.6
T.B. plus 2.	Quiescent ... ..	1	6	13	7	27	32.1
	Improved ... ..	4	9	15	9	37	44.0
	No material improvement ...	3	5	—	3	11	13.1
	Died in sanatorium ... ..	6	—	2	1	9	10.7
T.B. plus 3.	Quiescent ... ..	—	—	—	—	—	—
	Improved ... ..	—	—	—	1	1	20.0
	No material improvement ...	—	—	—	—	—	—
	Died in sanatorium ... ..	1	2	1	—	4	80.0
Diagnosis on discharge from observation.			Stay under 4 weeks.		Stay over 4 weeks.		
	Tuberculous ... ..			3	5	8	38.1
	Non-tuberculous ... ..			1	10	11	52.4
	Doubtful ... ..			—	2	2	9.5

Total ... 179

*Social activities.* The usual outdoor games were provided during the summer months : bowls and clock golf for the men and croquet for the women. Whist drives were held at fairly frequent intervals, and during the winter months the cinema entertainments were continued and several concerts and plays were given by friends from Barrow-in-Furness. On two occasions, sketches were given by the patients themselves and great credit is due to them for the excellent performances given.

During the year, a "Sports Committee" was formed amongst the male patients with good results.

The library continues to be greatly appreciated by the patients and staff. In addition to the books supplied by the County Tuberculosis Committee, we have again been indebted to the British Red

Cross Society for a supply of books and magazines, and also to numerous friends of the institution who continue to send magazines at frequent intervals.

*Church services.* Church of England. Canon Kenworthy holds a service and visits each patient every Thursday, and holds a celebration of the Holy Communion on the last Monday in each month.

Nonconformist. The Nonconformist minister, selected in turn from a panel of Nonconformist clergy, conducts a service on alternate Sunday afternoons. On several occasions these have taken the form of a musical service and have been greatly appreciated by the patients.

Roman Catholic. Father Morrissey, from Ulverston, hears confessions in the evening of every seventh week and the following morning administers Holy Communion.

We are deeply grateful to all the ministers who have attended gratuitously to the religious needs of the patients throughout the year.

*Visits by County Councillors.* Two special visits were paid by County Councillors during the year.

I should like to thank Dr. Fettes, Miss Woosey, and the staff for the assistance and help they have given me throughout the year.

### *Artificial Sunlight in the Treatment of Pulmonary Tuberculosis.*

When the treatment block was constructed at the end of 1932, a light treatment room was included and equipped with two carbon arcs, one Jesionek mercury vapour lamp and one Kromayer mercury vapour lamp.

As artificial light treatment for pulmonary tuberculosis was a new field, the work was approached purely from an experimental point of view, and we kept an entirely open mind as regards the results. In view of this a very careful selection was made of the cases to be given this form of treatment; briefly, the cases selected were those in which there was no evidence of any general reaction or signs of high temperature or tachycardia.

Long-flame carbon arc lamps and Siemen's snow-white carbons were used for general irradiation. The patients were given exposures at three feet distance twice a week, commencing with three minutes back and three minutes front, gradually increasing by one minute at each exposure to a total of thirty minutes back and thirty minutes



front. If any patient showed slight reaction by a rise of temperature, no increase of dose was given at the next exposure. In no case did the temperature rise above  $99.4^{\circ}$ , so that it was unnecessary to reduce the duration of exposure.

The following is a summary of the results of 26 cases treated by artificial light at High Carley Sanatorium :—

Number of cases treated (T.B. plus 4, T.B. minus 22) ... .. 26							
Number in which treatment was abandoned ... .. 2							
Net number treated ... .. 24							
Bacillary loss (3 out of 4 positive sputum cases) ... .. 3, or 75%							
Number of T.B. minus cases becoming positive ... .. Nil							
						Number	%
X-ray findings—							
Marked improvement				...	...	3	12.5
Improvement				...	...	16	66.7
Stationary				...	...	4	16.6
Worse				...	...	1	4.2
Clinical condition—							
Improved				...	...	18	75.0
Stationary				...	...	4	16.7
Worse				...	...	2	8.3
Blood sedimentation rate—							
Marked improvement				...	...	2	8.3
Improvement				...	...	14	58.3
Stationary				...	...	1	4.2
Worse				...	...	6	25.0
Not taken				...	...	1	4.2
Weight—							
Gained				...	...	19	79.2
Stationary				...	...	3	12.5
Lost				...	...	2	8.3

One case was abandoned on account of local sweating (palms of hands and popliteal spaces) and generally feeling worse, and another took his discharge before treatment was completed.

The most noteworthy fact in the above table is the general all-round improvement in the large proportion of the patients treated, more particularly the lesion improvement that occurred as demonstrated by the x-ray appearances, *i.e.*, 79.1 per cent.

In three of the four positive cases the sputum became negative during their course of artificial light, but no T.B. minus case became positive.

One case became worse, but I think that this was due to the patient inadvertently over-exposing himself to natural sunlight, and that the artificial light had no effect in causing the increased activity.

One female patient developed a pleural effusion and treatment was discontinued for one month until she was free from any sign of reaction. Treatment was then recommenced and the patient com-

pleted the course with excellent results, both as regards her general condition and the local lesion.

The duration of light treatment varied from 44 weeks down to 3 weeks in a case where treatment had to be abandoned.

The following statement shows the number of patients who received other forms of treatment either before or during their course of light therapy :—Artificial pneumothorax 4, artificial pneumothorax and phrenicectomy 1, artificial pneumothorax and sanocrysin 1, artificial pneumothorax and crisalbine 1, phrenicectomy 2, phrenicectomy and lung strapping 1, phrenicectomy and sanocrysin 1, sanocrysin 3, and lung strapping 1.

Artificial light therapy appears to be more popular amongst the female patients ; many of them personally felt so much benefit that when they were discharged they asked that arrangements be made for the treatment to be continued at their local dispensary.

*Conclusion.* Artificial light treatment, properly supervised and with due care given to the selection of cases, definitely does not do harm, and is probably a useful adjunct in the treatment of pulmonary tuberculosis.

#### *Gold Therapy.*

The gold salts mainly used at High Carley have been sanocrysin and crisalbine, and most encouraging results have been observed.

Intra-muscular injections of solganol have been tried in a few cases and the results have also been encouraging.

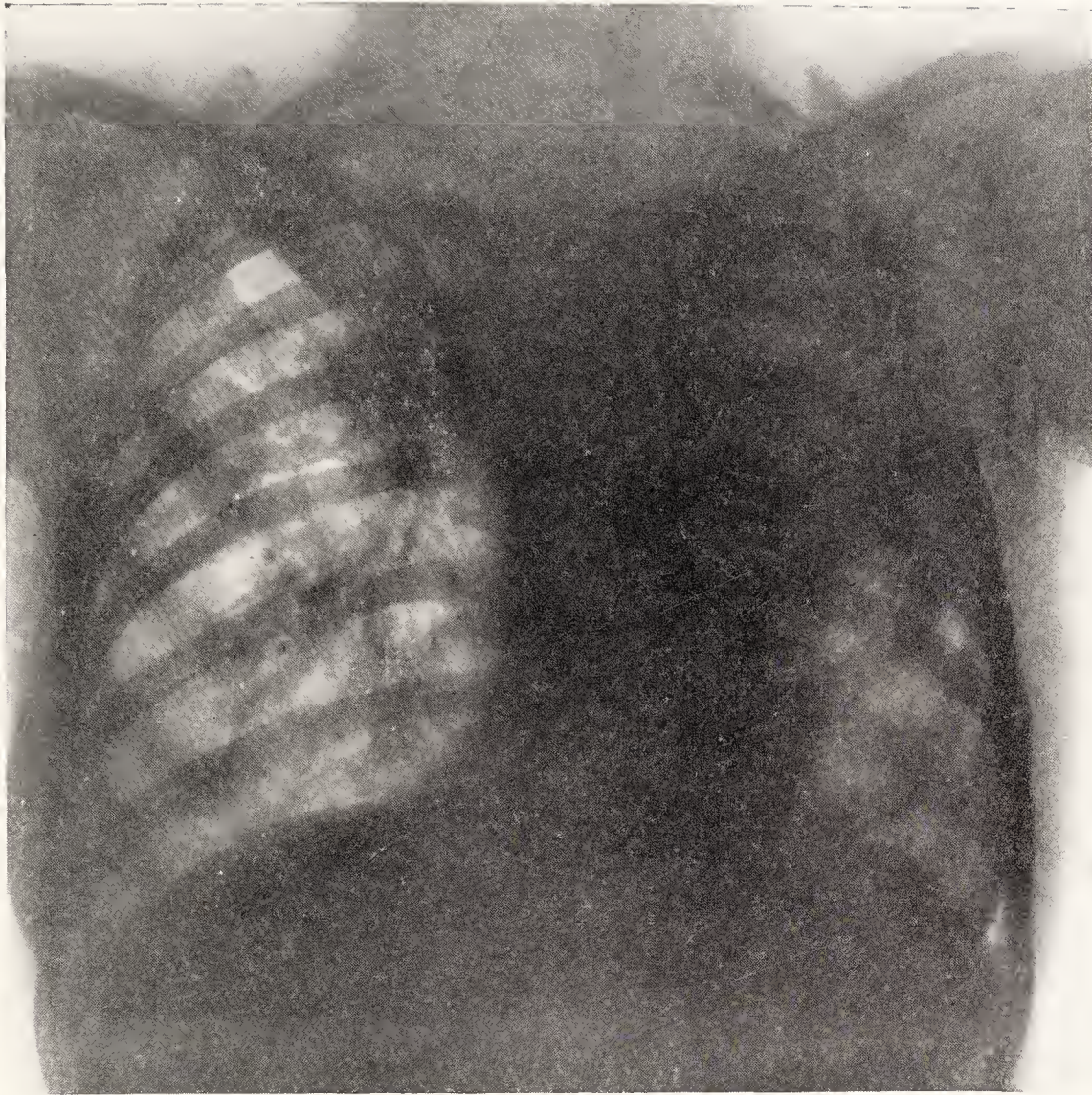
During the year treatment with intravenous injections of sanocrysin and crisalbine diluted with sterile distilled water were given to 101 patients. The dosage was 0·025 grams, increasing by 0·05 grams up to a final dose of 0·5 grams and a total of 6 grams.

No serious reactions were encountered. Slight reactions usually passed off after a period of waiting, but if there was any recurrence treatment was stopped. I think that the absence of any serious complication was due to :—

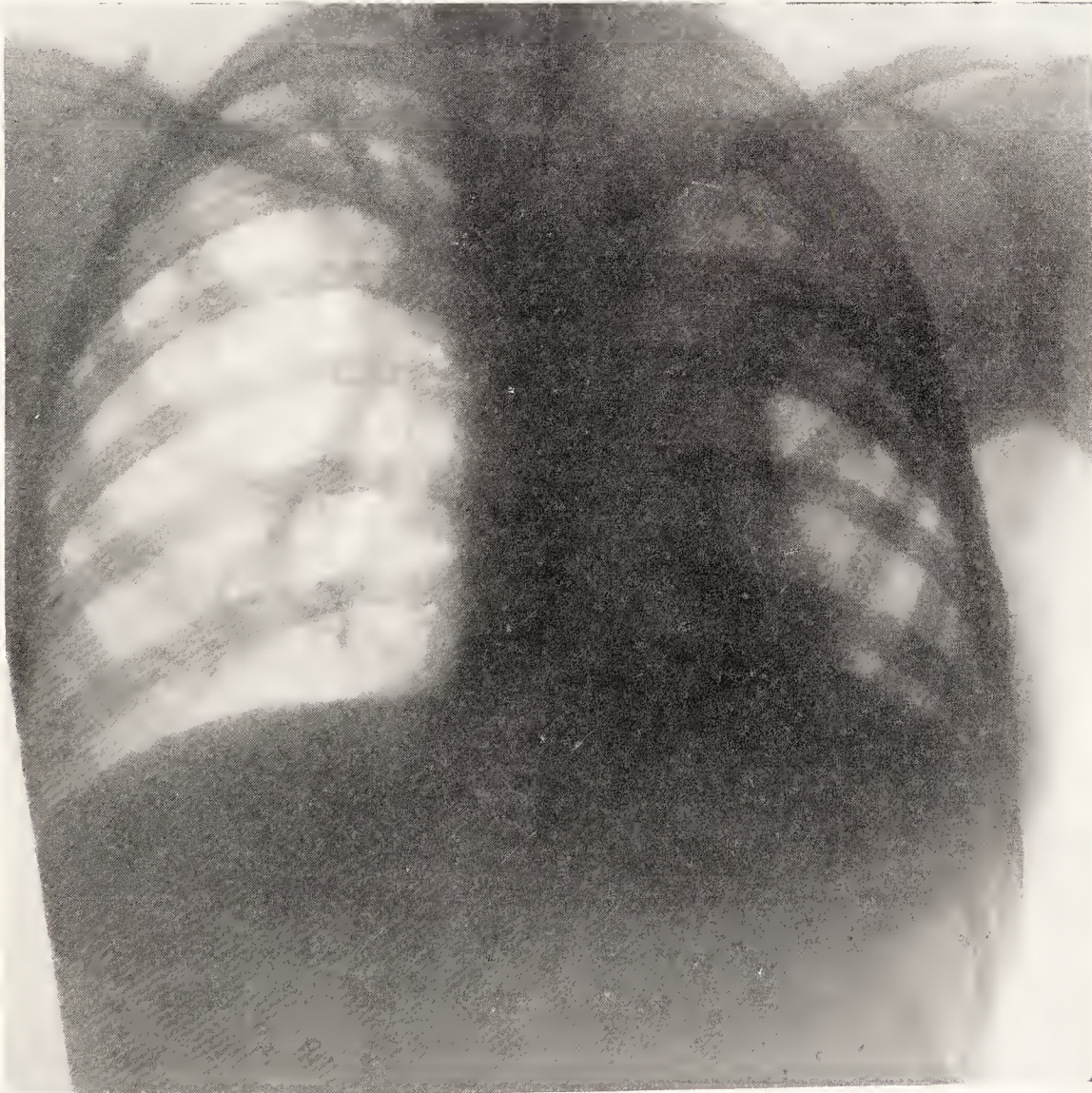
- (1) The small gradually increased doses, which allow the patient to get thoroughly accustomed to the drug before the final dose of 0·5 grams.
- (2) Stopping treatment if any recurrence of slight reactions took place.
- (3) Resting the patient for a day after each injection.



## SANOCRY SIN.



H.C.1(a).—E.M.D., female, aged 20, single. T.B. plus 2. Skiagram taken 1-10-32 shows on right side marked infiltration throughout the whole of the lung with shadowing at the apex ; on left side, dense shadowing over upper and middle zones with infiltration at the base.



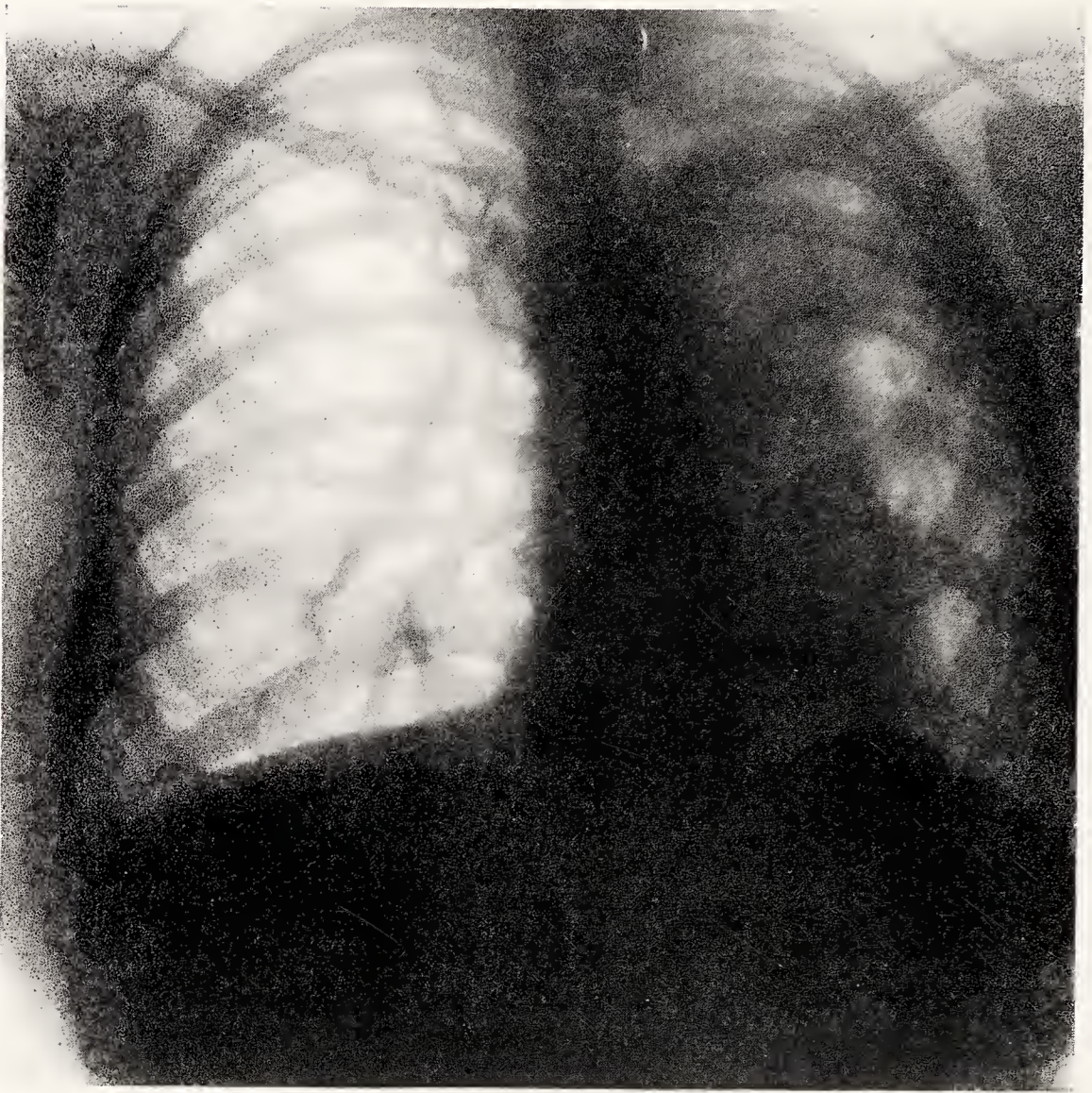
H.C.1(b).—Same patient. Skiagram taken 18-5-33, after treatment with sanocrysin, shows on right side marked clearing up of infiltration and shadowing at apex, with retraction of root shadow ; on left side, clearing up of infiltration at base with reduction of shadowing in upper and middle zones. Patient gained so much weight that it was impossible to find the veins, and she had to be given solganol intramuscularly.

[Skiagrams taken at High Carley Sanatorium.]

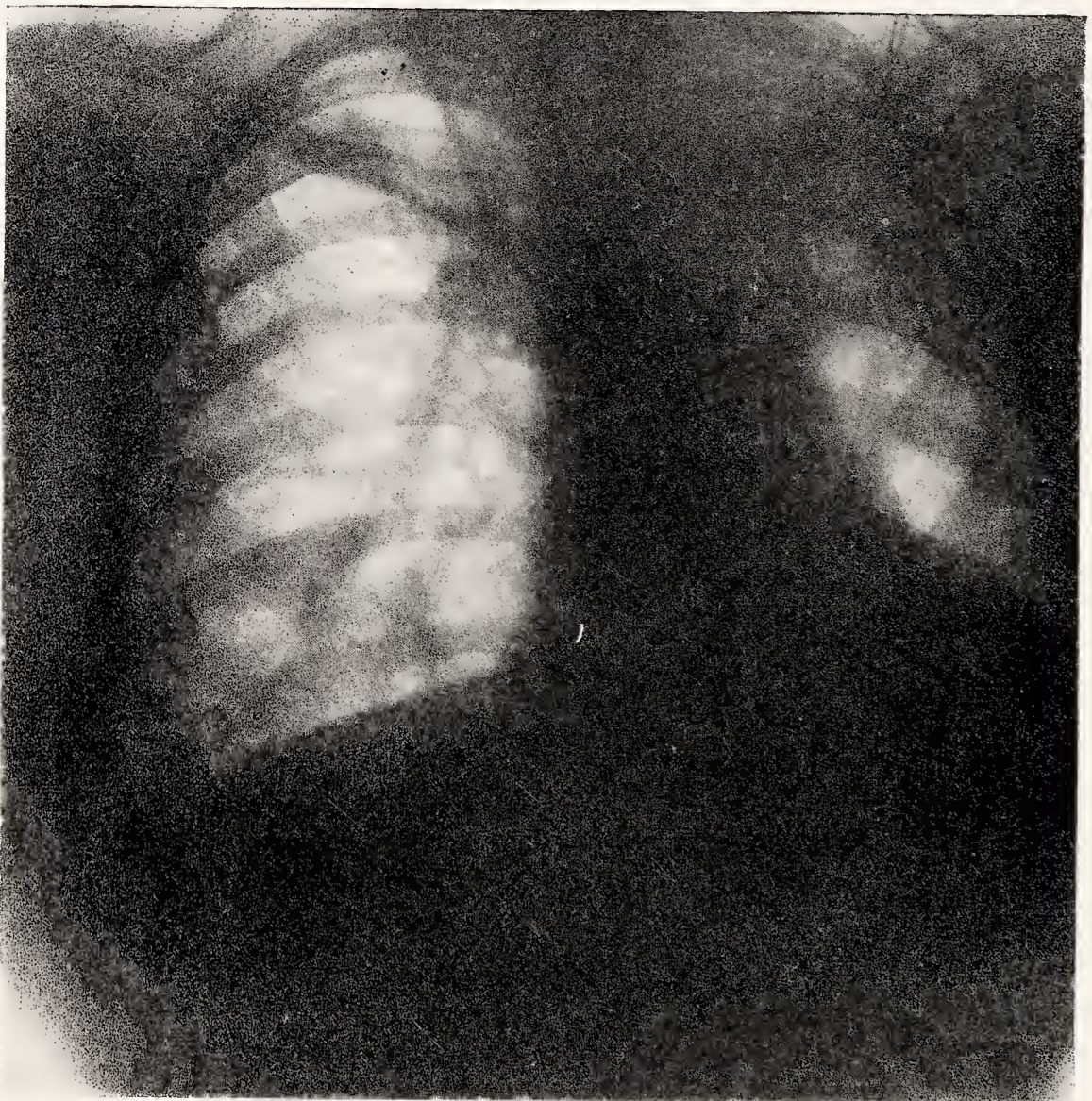
*Right side.*

*Left side.*





H.C.1(c).—Same patient. Skiagram taken 9-2-34, after solganol treatment, shows still further clearing up of both lungs.



H.C.1(d).—Same patient. Skiagram taken 26-4-34, after phrenicectomy had been performed to relieve drag on left side, shows a rise of diaphragm of  $2\frac{1}{2}$  spaces, with definite compression and release of drag on this side. Gain in weight 50 lbs. Sputum nil (previously positive, 2-3 drs. per day).

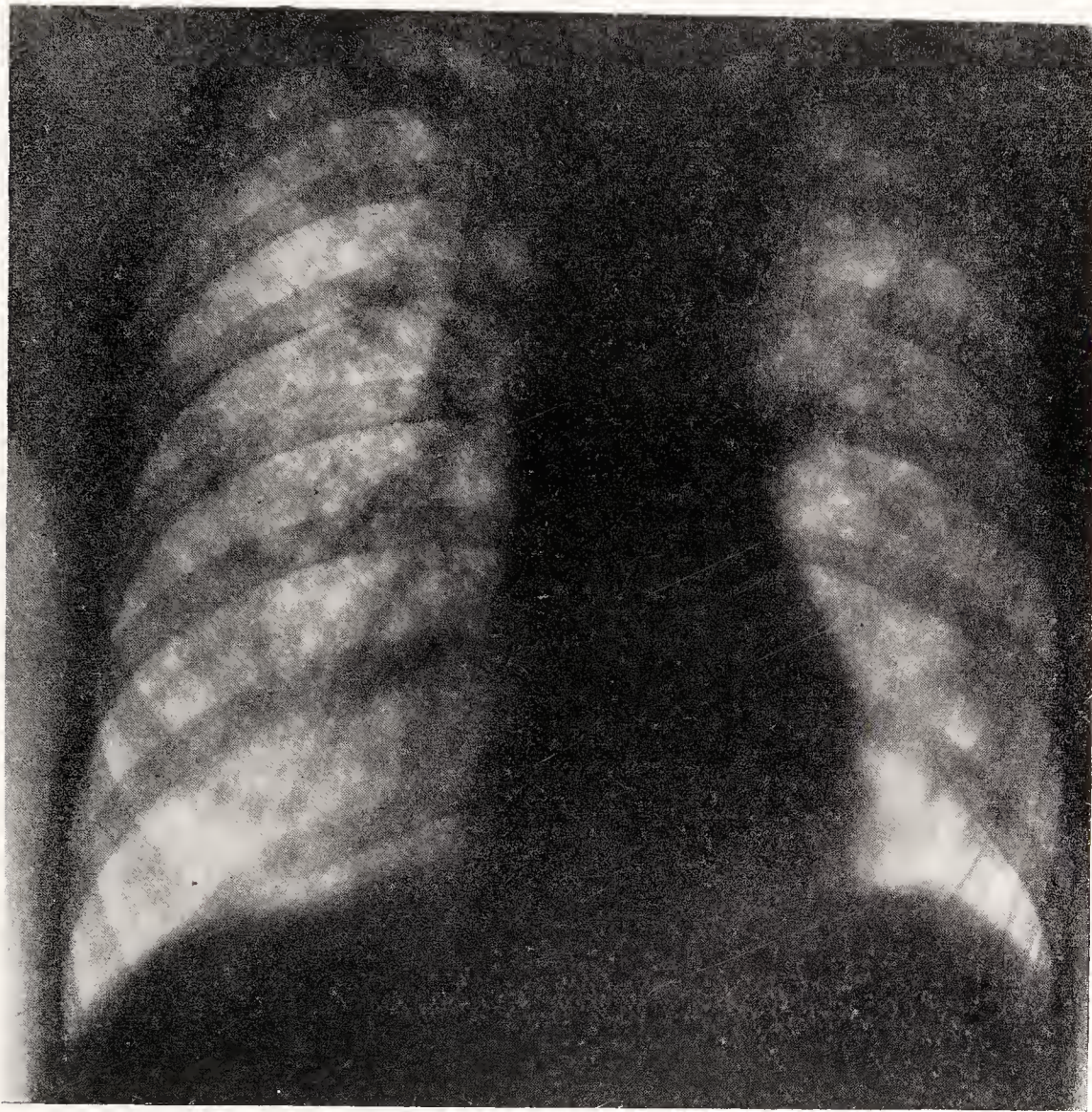
[Skiagrams taken at High Carley Sanatorium.]

*Right side.*

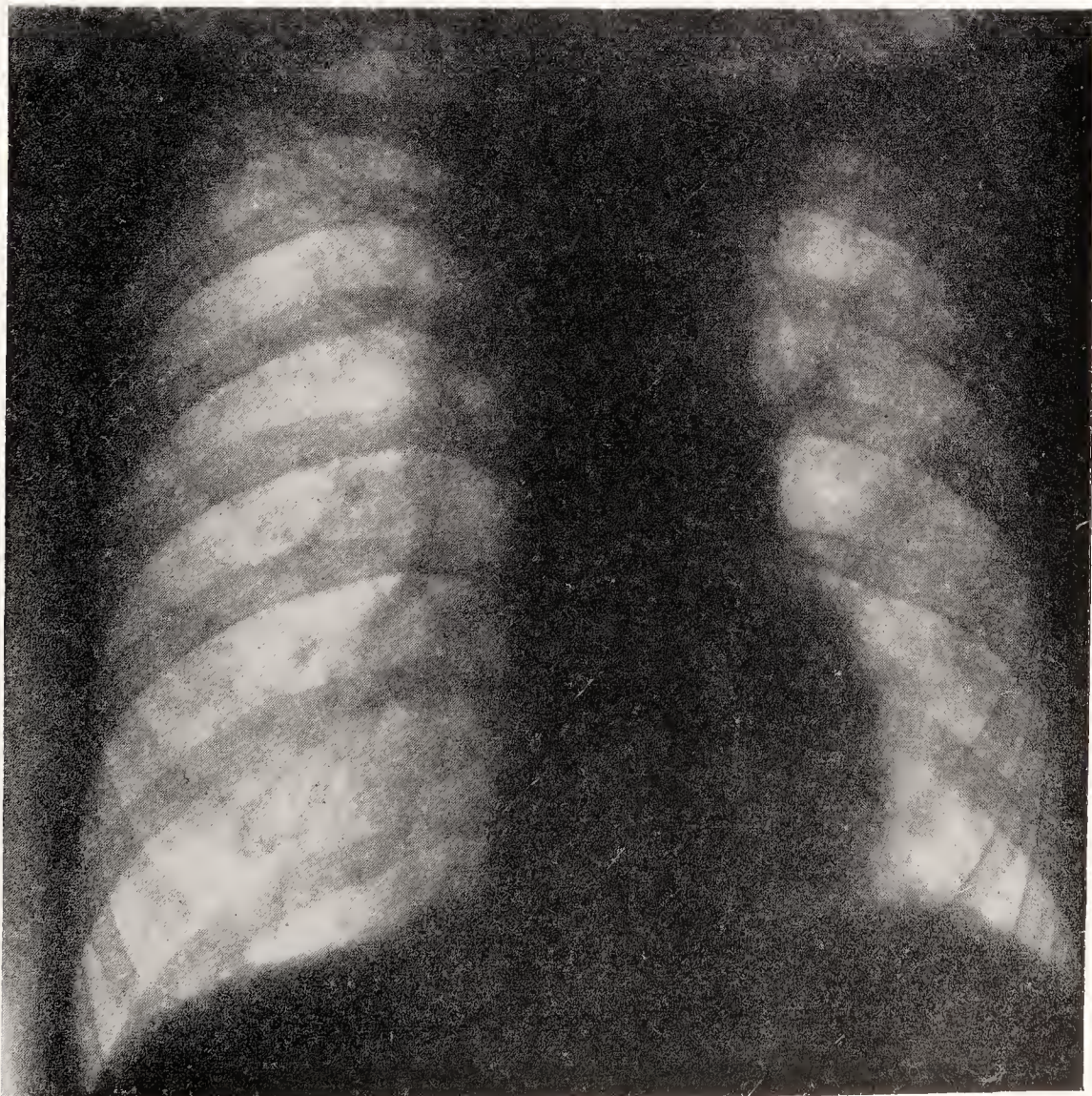
*Left side.*



SANOCRYSIN (contd.).



H.C.2(a).—E.F., male, aged 35. T.B. plus 2. Skiagram taken 17-5-33 before sanocrysin shows widespread infiltration throughout both lungs.



H.C.2(b).—Same patient. Skiagram taken 17-10-33, after first course of sanocrysin, shows marked clearing up of the infiltration especially in the right lung.

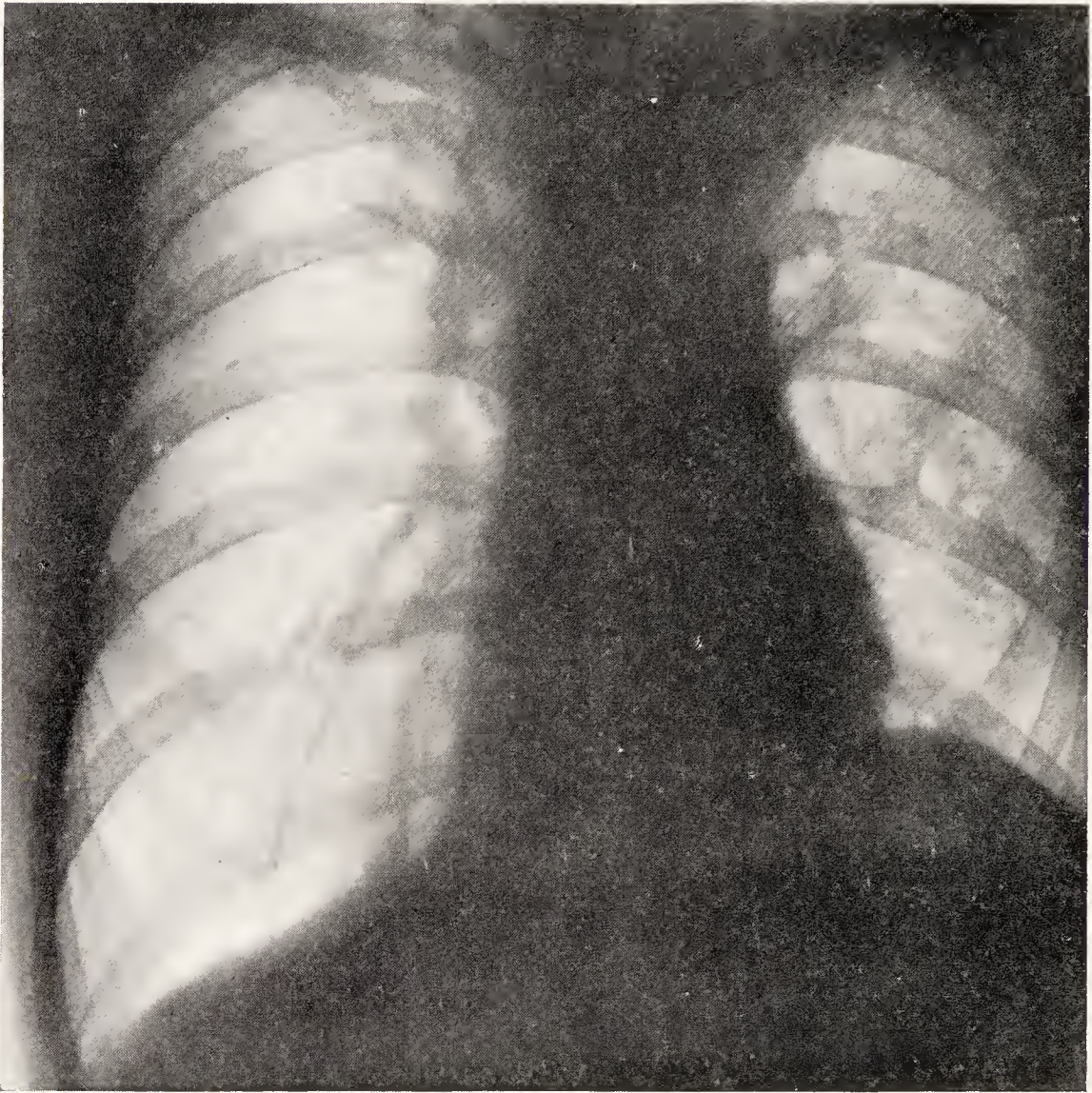
[Skiagrams taken at High Carley Sanatorium.]

*Right side.*

*Left side.*



## SANOCRYSIN (contd.).



H.C.2(c).—Same patient. Skiagram taken 19-2-34, after second course of sanocrysin and phrenicectomy, shows further clearing up, the left side being helped by the phrenicectomy. Gain in weight 11 lbs. Sputum now negative,  $\frac{1}{2}$  oz. per day (previously positive, 3 ozs. per day).

[Skiagram taken at High Carley Sanatorium].

*Right side.*

*Left side.*



Some authorities report loss of weight during the administration of gold, but I find the reverse to be the case; for in our series the remarkable feature was the decided gain in weight.

In comparison with previous years when no specialised treatment was carried out at the sanatorium, the improvement in the bacillary loss in the cases treated with both sanocrysin and crisalbine is about 25 per cent.

The most striking features of the treatment were improvement in the x-ray picture, the sedimentation rate, and reduction in the amount of sputum which in a large percentage of cases became negative.

Skiagrams of two interesting cases are here inserted.

*Sanocrysin.* A total of 60 patients received this form of treatment during 1933, 19 continuing from 1932, and 41 commencing during 1933. Treatment was abandoned in 18 cases, for the following reasons:—Pyrexia 3, albumen 3, general malaise 1, dermatitis 2, diarrhoea and ulceration of mouth 1, excessive (but not serious) reaction 1, persistent diarrhoea 1, pyrexia and general nausea 1, dermatitis of ear 1, gastritis and dermatitis 1, left County 1, transferred to Elswick Sanatorium 1, died 1.

Of the remaining 42 cases, 31 completed a course of three or more grams (in 2 of which treatment was abandoned on account of albumen and ulceration of mouth, and headaches, persistent diarrhoea and pyrexia), and 11 were still undergoing treatment at the end of the year.

At the commencement of treatment 24 of the 31 patients who received three or more grams had a positive sputum, but on the termination of the course 13 had lost their tubercle bacilli, giving a bacillary loss of 54·1 per cent.

The x-ray appearances showed improvement in 90·3 per cent. of the cases and the sedimentation rate in 83·1 per cent.; reduction in the amount of sputum was found in 68·0 per cent. and gain in weight in 83·0 per cent.

The number of injections during the year was 660.

Below are given the number of patients and the other forms of treatment they received either before or during their course of sanocrysin:—Artificial pneumothorax 3; artificial pneumothorax and phrenicectomy 1; artificial pneumothorax, phrenicectomy, and artificial light 1; phrenicectomy 4; and lung strapping 1.

Table 39 below shows the position at the end of 1933 of 40 patients who received three or more grams of sanocrysin at the High Carley Sanatorium during the year 1932 :—

TABLE 39.

Number of patients who received treatment : classification.	Net number after deducting removals, etc.	Position at the end of 1933 (average of 18 months afterwards).			
		Alive.		Dead.	
		Fit for work.	Unfit for work.	Number.	%
T.B. plus .. .. . 32	28	*15	*7	6	21·4
T.B. minus .. .. . 8	6	2	3	1	16·6
TOTAL .. .. . 40	34	17	10	7	20·5

\* Of the 22 living cases originally classified as T.B. plus the sputum was negative in 14 instances at the end of 1933.

*Crisalbine*.—During the latter part of 1932 and in the year 1933, 41 patients commenced this form of treatment. In 12 cases treatment was abandoned for the following reasons :—Dermatitis and general oedema of face 1, albumen 3, pyrexia 2, diarrhoea 1, hæmoptysis 1, dermatitis 2, left for other than medical reasons 2.

Of the remaining 29 cases, 20 completed a course of three or more grams, and 9 patients were still receiving treatment at the end of the year.

At the commencement of treatment 16 of the 20 cases completing three or more grams had a positive sputum, but on terminating the course 10 of these had lost their tubercle bacilli, giving a bacillary loss of 62·5 per cent.

The x-ray appearances showed improvement in 80·0 per cent. of the cases, and the sedimentation rate in 85·0 per cent. ; there was a reduction in the amount of sputum in 45·0 per cent., and a gain of weight in 95 per cent.

The number of injections during the year was 331.

The following statement shows the number of patients who received other forms of treatment either before or during their course of crisalbine :—Artificial pneumothorax 6, artificial pneumothorax and artificial light 1, and phrenicectomy 1.



## (2) OUBAS HOUSE CHILDREN'S SANATORIUM, ULVERSTON.

The medical superintendent, assistant medical superintendent, and matron of the High Carley Sanatorium are also responsible for the work at Oubas House. The sister-in-charge is Miss D. Pope, and the certificated school teacher is Miss A. Gibson.

The house, the property of the County Council, stands in its own grounds (about one acre in extent), and accommodates 21 girls. Educational instruction is given to the children in conformity with the requirements of the Board of Education.

During the year, 11 patients received from the visiting dental surgeon, Mr. A. Miller, some form of dental treatment particulars of which are given in Chapter XXVIII.

The average length of stay of patients at Oubas House during 1933 was as under :—

Patients discharged	...	...	...	...	262 days.
Patients who died in the sanatorium	...	...	...	...	129 days.

Dr. Leggat reports as follows :—

During the year, 20 patients were admitted, 22 discharged and one died. The condition on discharge of the 22 cases was as follows :—

Disease quiescent, 16 ; improved, 4 ; stationary, 1 ; worse, 1. In addition, eight children were admitted for observation and diagnosis, and of these four were discharged with the following results :—Tuberculous, 1 ; non-tuberculous, 3.

Natural sunlight treatment was given at every opportunity, and all meals were taken out of doors. On a number of occasions the children were conveyed by bus to Bardsea for the purpose of undergoing natural sunlight treatment.

For a children's hospital we have been remarkably free from infectious diseases ; only one child developed diphtheria, and she was transferred to the Ulverston Joint Hospital Board's Isolation Hospital.

The patients at Oubas House are mainly T.B. minus cases. Any case that is admitted with a positive sputum or develops a positive sputum whilst in the institution is transferred to High Carley sanatorium, and by this means we prevent the T.B. plus cases from mixing with the children whose sputum is free from tubercle bacilli. Any case that requires special treatment is also transferred to High Carley, and during the year two children were so transferred for the purpose of having an artificial pneumothorax which was successfully induced in each case.

The Mantoux tuberculin test was carried out in 23 cases with the following results :—

Number of positive reactions after 0·1 c.c. of 1/10,000 solution...	13
Number of positive reactions after 0·1 c.c. of 1/1,000 solution...	3
Number of negative reactions after 0·1 c.c. of 1/10,000 solution...	7

There were 63 specimens of sputum examined during the year, one of which was positive and 62 negative.

The work of the school has been continued on similar lines to that of previous years.

The welcome visits of Lady Fell continue to be a pleasant interlude. Mr. B. P. Allen, whilst a member of the County Council, visited the school at frequent intervals.

I should like again to thank Sister Pope for the assistance she has given me in looking after the children at Oubas House.

### (3) ELSWICK SANATORIUM, NEAR KIRKHAM.

*Medical Superintendent* ... DR. G. BARKER CHARNOCK.

(Dr. Charnock is also consultant tuberculosis officer for the Fylde Dispensary Sub-Area—i.e., the area around the sanatorium—containing a population of 66,312.)

*Visiting Consulting Chest Surgeon* ... MR. H. MORRISTON DAVIES.

*Matron* ... MISS I. G. BARCLAY

(to 6/8/34).

MISS A. JONES (from 7/8/34).

This sanatorium is situated on the east side of Elswick village, and is about six miles from Kirkham station. The buildings and about 11 acres of land belong to the Fylde, Preston, and Garstang Joint Smallpox Hospital Board, and are held on lease by the County Council until 1955. The Council are under an obligation to vacate the premises in case of a severe epidemic of smallpox. Accommodation is provided for 38 males and 32 females; total 70 pulmonary cases. An x-ray apparatus is provided in a separate building erected in 1925.

A treatment block, built as an extension to the x-ray room, was completed in May, 1933, and consists of operating theatre, sterilising room, consulting room, dressing rooms, and lavatory. This block also serves as a dispensary for out-patients from the southern part of the dispensary area and saves their attendance at the Fleetwood Dispensary.

During the year, 72 patients received from the visiting dental surgeon, Dr. R. D. Allison, some form of dental treatment particulars of which are given in Chapter XVIII.



The average length of stay of patients at Elswick during 1933 was as under :—

Patients discharged	...	...	...	...	197 days.
Patients who died in the sanatorium	...	...	...	...	154 days.

Dr. Charnock reports as follows on matters relating to the treatment of patients and the administration of the sanatorium :—

Three double-bedded, heated shelters, to replace old shelters, together with a sanitary block are in course of construction.

The x-ray room has been re-organised to provide more expeditious working, and a new " Protex " tube installed to allow of more protection and better skiagraphy.

Treatment consists of routine sanatorium treatment, together with chest splinting, and collapse therapy. Inhalation therapy is now available for patients (see Chapter VII). All patients are reviewed on admission as to their suitability for artificial pneumothorax or phrenicectomy operations. Cases suitable for thoracoplasty are transferred to High Carley Sanatorium where special facilities exist for this particular form of treatment.

The items relative to the work of diagnosis and treatment are set forth below :—

Diagnosis : Skiagrams, 237 ; screenings, 423 ; sedimentation tests, 236 ; lipiodol tests, 3 ; pleural fluid examinations, 5 ; sputum examinations, 573 ; Wassermann tests, 4 ; barium meals, 1 ; post-mortem examinations, 2.

Treatment : Vaccines, 26 ; tuberculin, 26 ; sanocrysin, 14 ; replacements—fluid 4, pus 28 ; artificial pneumothorax inductions 36 ; artificial pneumothorax refills, 459 ; pleural anæsthesia, 5 ; phrenicectomies, 25 ; inhalation treatments, 134.

An inquiry into the after histories of the 17 patients who had received treatment by phrenicectomy during the years 1930 and 1931 elicited the fact that eleven (64·70 per cent.) are living, five (29·41 per cent.) have died, and one (5·88 per cent.) is untraced through having left the County area.

The number of patients in the institution on the 31st December, 1933, who were having special treatment, was as follows :—

Artificial pneumothorax	...	...	...	...	9
Phrenicectomy (or recovering from the operation)	...	...	...	...	9
Inhalation therapy (see article on pages 34-38)	...	...	...	...	10

*Sputum examinations.*—In the course of the routine work, cases come under review where only one positive sputum result has ever been registered, sometimes in an old Army discharged bronchitic case. Sputum examinations are always negative and the skiagrams

indefinite for tuberculosis. Cases such as these are less likely to occur under modern methods of diagnosis, but they go to swell the numbers on the registers. Having in mind such cases, very careful bacteriological and cytological examination of the sputum is considered an important part of the investigation of a case of pulmonary infection. Great care is taken to eliminate erroneous findings occurring from contamination of slides, apparatus, etc. A gasoline concentration outfit has been established in the laboratory at Elswick for the concentration examination of large quantities of sputum and pus. The essential apparatus consists of an electric shaker with a broad stage to take large test tubes, and a water-bath with thermostat. Patients who are negative for tubercle bacilli by three ordinary tests, and who have much sputum and signs of broken-down lung, are submitted to the test.

*Mantoux tests in observation cases and child contacts.*—The Mantoux intradermal tuberculin test is used on all observation cases sent into the sanatorium, and in the examination of child contacts of positive sputum cases in the dispensary area.

Children are x-rayed before and after Mantoux tests in which old tuberculin (1/1000) is used. Up to the present no alteration in the skiagram after 48 hours has been noted, but those children with strong local reactions are placed under special observation with repeated radiological tests.

The patients have enjoyed the pleasant surroundings of Elswick, and the gradual improvement in accommodation has made their stay in the sanatorium more comfortable. They have abundant indoor and outdoor recreations. A good library and fully equipped wireless throughout the institution gives added pleasure. Occupational therapy and graduated walking exercises are daily routine, and the patients assist, according as their medical condition allows, in all activities of the hospital, which include fruit farming, poultry and pig rearing, gardening, joinery, and light domestic work about the wards.

The water and milk supplies are chemically and bacteriologically examined at regular intervals, and continue satisfactory. The fruit farm has again had a good year and more trees have been planted.

During the year we had the honour to receive the County Tuberculosis Committee, who inspected the sanatorium and grounds. Later, the Fylde, Preston, and Garstang Joint Smallpox Hospital Board paid us a visit. Subsequently we had Dr. Norman F. Smith, of the Ministry of Health, Dr. S. D. Metcalfe, Regional Medical Officer of the Ministry of Health, and the Medical Officer to the Silicosis Board.



I would like to place on record our appreciation of the services rendered by the three honorary chaplains who have attended regularly throughout the year and so willingly paid special visits to minister to those patients who were seriously ill.

In conclusion I should like to thank all members of the staff for their helpful co-operation.

The following Table 40 gives the condition of patients discharged from the Elswick Sanatorium during 1933 :—

TABLE 40.

Classification on admission to the sanatorium.	Condition at time of discharge.	Duration of residential treatment in the sanatorium.				Total.	
		Under 3 months.	3—6 months.	6—12 months.	More than 12 months.	No.	%
T.B. minus.	Quiescent ... ..	5	13	9	2	29	54·7
	Improved ... ..	10	7	2	—	19	35·8
	No material improvement ...	2	—	—	1	3	5·7
	Died in sanatorium ... ..	2	—	—	—	2	3·8
T.B. plus 1.	Quiescent ... ..	—	—	1	1	2	14·3
	Improved ... ..	—	2	2	2	6	42·9
	No material improvement ...	1	2	1	1	5	35·7
	Died in sanatorium ... ..	—	—	1	—	1	7·1
T.B. plus 2.	Quiescent ... ..	—	1	4	2	7	11·7
	Improved ... ..	8	12	9	4	33	55·0
	No material improvement ...	6	2	3	—	11	18·3
	Died in sanatorium ... ..	3	4	2	—	9	15·0
T.B. plus 3.	Quiescent ... ..	—	—	—	1	1	25·0
	Improved ... ..	1	—	—	1	2	50·0
	No material improvement ...	—	—	—	—	—	—
	Died in sanatorium ... ..	—	1	—	—	1	25·0
Diagnosis on discharge from observation.		Stay under 4 weeks.		Stay over 4 weeks.			
	Tuberculous ... ..	4		11		15	71·4
	Non-tuberculous ... ..	—		5		5	23·8
	Doubtful ... ..	1		—		1	4·8

Total .. 152

## (4) CHADDERTON PULMONARY HOSPITAL, NEAR OLDHAM.

*Visiting Medical Superintendent* ... DR. JAMES WOOD.

(Dr. Wood is also medical officer to the Chadderton, Royton, and Crompton Joint Hospital Board, and the medical officer of health of the Urban District of Chadderton.)

*Matron* ... ... MISS I. FELSTEAD.

An agreement was made on the 1st October, 1919, with the Chadderton, Royton, and Crompton Joint Hospital Board for the use of the buildings at Racefield, erected as a smallpox hospital, for the treatment of patients suffering from pulmonary tuberculosis. Accommodation is provided for 44 female patients. The County Council are under an obligation to vacate the premises in case of an epidemic of smallpox.

The average length of stay of patients at Chadderton during 1933 was as under :—

Patients discharged	...	...	...	...	154 days.
Patients who died in the institution	...	...	...	...	133 days.

Dr. Wood reports as follows :—

During the year, 80 patients were admitted, 57 discharged (including four who were transferred to other institutions), and 26 died. Of the patients admitted, five were under 18 years of age and nine between 18 and 21 years.

The number of sputum examinations made during the year was 240, of which 57 were positive and 183 negative.

Again our thanks are due to the County Council for the special Christmas fare and a further supply of books for the library, to the organisers of the various concert parties who have entertained us during the year, and to the Red Cross Society for a gift of books and periodicals.

During the year electric energy has been carried to the hospital, and all the rooms, etc., are now provided with electric light.

Owing to the wonderful summer less use was made of the library, only 372 books being lent out as against 620 the previous year.

No special form of treatment was instituted during the year.

Towards the end of 1933 enquiries were being made as to the possibility of altering the large wooden hut so as to make it suitable for an x-ray apparatus and treatment room.



## (5) HEATH CHARNOCK PULMONARY HOSPITAL, NEAR CHORLEY.

*Visiting Medical Superintendent* ... DR. J. W. RIGBY.  
 (Dr. Rigby is also medical officer to the Chorley Joint Hospital Board.)

*Matron* ... ... MISS H. SINCLAIR.

In 1914, by agreement with the Chorley Joint Hospital Board, the County Council leased  $1\frac{1}{2}$  acres of land adjoining the Board's isolation hospital on which they erected, equipped, and furnished two pavilions, dining hall, and additional accommodation for the staff.

The Joint Board are, by agreement, responsible for the maintenance, nursing, and treatment of the patients, the County Council paying to them the cost thereof.

Accommodation is provided for 34 patients—16 men and 14 women in the two pavilions, and four men in wooden sleeping shelters.

The average length of stay of patients at Heath Charnock during 1933 was :—Patients discharged 198 days, patients who died in hospital 74 days.

Dr. Rigby has kindly furnished the following report :—

During the year under report 76 patients were admitted, 59 discharged, and 15 died.

In a pulmonary hospital such as Heath Charnock there is little to report, as most of the cases are in an advanced stage of the disease and the treatment is confined to easing the numerous disabilities which develop. It is very hard to tell if any one drug or line of treatment makes an improvement in the chest condition of these advanced patients, although most of the recognised therapeutic measures are tried. The practice of good feeding, plenty of rest and fresh air is carried out. This appears to be the only way to enable the patients to put on weight and so increase their resistance and reserve of strength.

The lawns, garden, and bowling green are all kept in good condition so as to provide recreation for those who are able to get about and a pleasant outlook for those who are compelled to stay in bed. The usual outings in summer and the concerts in winter have provided a mental stimulus for the patients as well as a change in the long convalescence which this ailment requires. Consequently, there has been no trouble or occasion for disciplinary action ; the patients have been content to stay, separated from their relations and helping to prevent the spread of the disease in those cases where the home conditions are unsuitable.

A word of thanks should be given to the matron and the staff for the way in which they have arranged the trips and taken part in the entertaining.

## (6) WRIGHTINGTON HOSPITAL, APPLEY BRIDGE, NEAR WIGAN.

*Medical Superintendent* ... ... DR. E. H. ALLON PASK.

(Dr. Pask is also consultant tuberculosis officer for the Wigan County Dispensary Sub-Area—i.e., the area around and near the hospital—containing a population of 109,280.)

*Visit Consulting Orthopædic Surgeons* ... MR. T. P. McMURRAY.  
MR. HARRY PLATT.

*Visiting Consulting Ophthalmic Surgeon* ... MR. H. H. BYWATER.

*Assistant Medical Superintendent* ... DR. E. H. W. DEANE.

*Junior Assistant Medical Officer* ... DR. J. DOBSON.

*Matron* ... ... MISS E. MOSELEY.

*Assistant Matron* ... ... MISS M. L. STRUDWICK.

The Wrightington Hospital is situated close to the high road between Standish and Parbold, about six miles north-west of Wigan; altitude 300 feet above sea level. A scheme for the adaptation of the Hall as a nurses' home and the erection of new buildings to provide accommodation for 226 patients was adopted by the County Council and approved by the Ministry of Health towards the end of 1927. The first patients were admitted on the 14th December, 1931.

The accommodation provided is utilised as under :

Adults : Three one-storey pavilions (two for men and one for women).

One pavilion contains 40 beds, a warm ward for four beds and single cubicles for two beds, and in each of the other two pavilions accommodation for 30 non-pulmonary cases and cubicles for 10 combined cases of pulmonary and non-pulmonary tuberculosis ... ... 126 beds.

Children : Two one-storey pavilions for non-pulmonary tuberculosis—

each pavilion containing 40 beds, a warm ward for four beds and single cubicles for two beds ... ... 92 beds.

Isolation Block ... ... 8 beds.

---

226 beds.

---

In addition to the patients' pavilions, there are the following buildings:—Treatment block, kitchen block, official block, power house, laundry, quarters for nurses and maids (modern portion of the Hall and an annexe), medical superintendent's house, seven cottages for male employees, outbuildings (utilised for garages, workshops, stores, etc).

The capital cost of the Wrightington Hospital has worked out at £670 per bed with land, towards which the Ministry of Health made a grant of £40,680.

The water supply is obtained from Robin Hood Well (1¼ miles distant), which is the property of the County Council. An arrangement



also exists to obtain water in case of necessity from the well of the Wigan Rural District Council. New sewage works are installed on the estate 250 yards from the nearest pavilion. The electric light is from the public supply.

The Lancashire Education Committee have kindly arranged for lecturers to visit the institution to speak on social history and current events to adult patients; there is a part-time instructress who teaches handicrafts to both men and women. For the children there is a head teacher, with two assistants.

During the year, 173 patients received from the visiting dental surgeon, Mr. J. J. Ward, some form of dental treatment particulars of which will be found in Chapter XXVIII.

The average length of stay of patients at Wrightington during 1933 was as under :—

Patients discharged	...	...	...	...	181 days.
Patients who died in the hospital	...	...	...	...	166 days.
Observation cases	...	...	...	...	83 days.

Dr. Pask reports as follows :—

During the year, 348 patients were admitted, 317 discharged, and 25 died. Table 41 (overleaf) deals with the patients who were suffering from tuberculous conditions.

In addition to the 294 patients shown in Table 41, 27 adults and 21 children, the majority of whom had been admitted for observation purposes, were discharged as suffering from conditions other than tuberculosis such as perinephric abscess, lymphadenoma, Scheuermann's disease, osteo-myelitis, Köhler's disease, Perthe's disease, and pyogenic abscess thigh. One of these patients died in the hospital.

From Table 41 it will be seen that in the majority of cases of non-pulmonary tuberculosis there is a reasonable hope of the disease becoming quiescent as the result of treatment. Unfavourable cases are those which present multiple lesions (including the combined pulmonary and non-pulmonary cases), and most of the deaths which occurred were in this type of case. The fact of multiple lesions being present indicates very poor resistance to the disease.

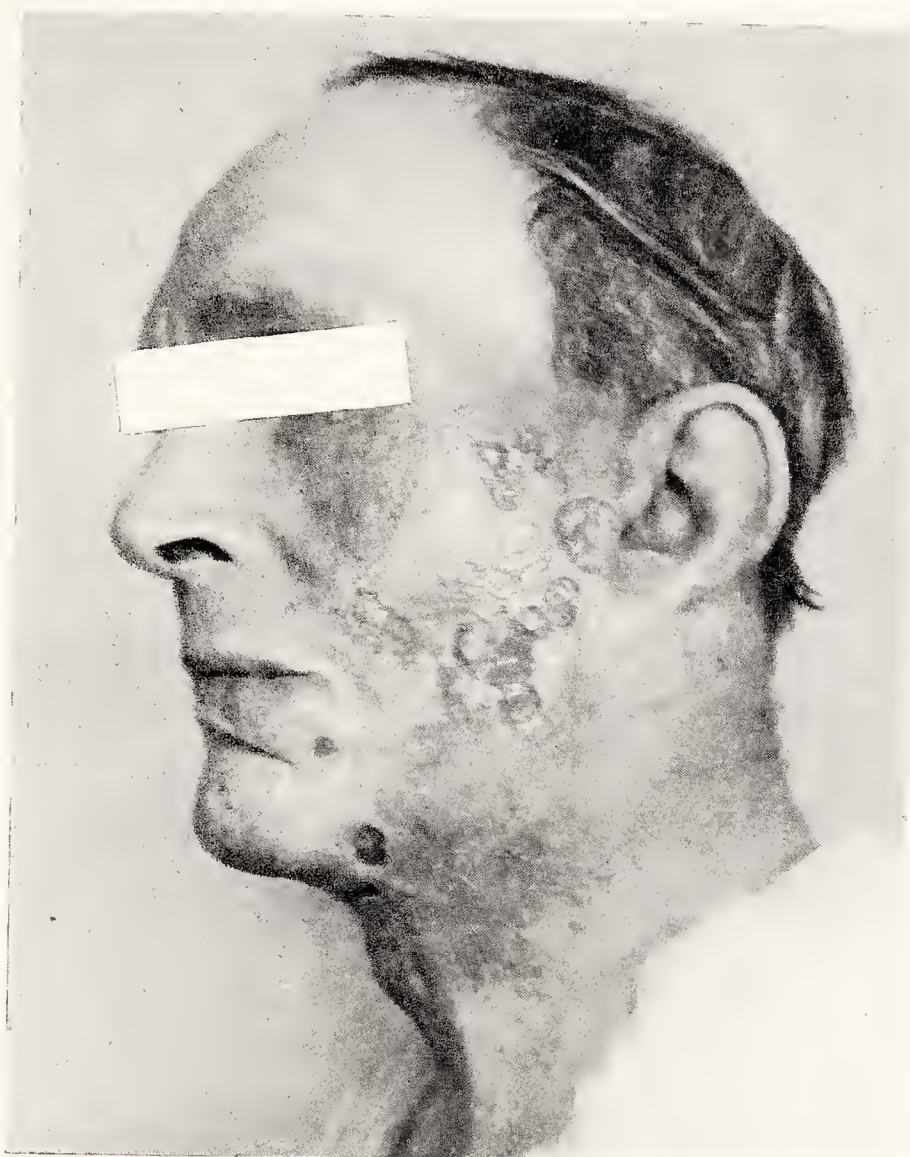
The broad lines of treatment for all forms of tuberculosis are the same, but certain types receive special treatment in addition.

Table 41. Condition on discharge of 294 patients suffering from tuberculosis.

LESION.	ADULTS.					CHILDREN.				
	Quies.	Imp.	Stat.	Worse.	Died.	Quies.	Imp.	Stat.	Worse.	Died.
Spine—										
Cervical ... ..	—	—	1	—	—	1	—	—	—	—
Cervico-dorsal ... ..	—	—	—	—	—	1	—	—	—	—
Dorsal ... ..	8	3	—	—	2	1	—	—	—	—
Dorso-lumbar ... ..	3	1	—	—	—	—	—	—	—	—
Lumbar ... ..	5	1	2	1	1	3	—	1	—	—
Hip ... ..	14	6	—	—	2	9	2	1	—	—
Knee ... ..	12	3	—	—	—	8	2	—	—	—
Tibia ... ..	—	1	—	—	—	3	—	—	—	—
Fibula ... ..	2	—	—	—	—	—	—	—	—	—
Ankle ... ..	1	4	—	—	—	4	—	—	—	—
Bones of foot ... ..	2	2	—	—	—	1	1	—	—	—
Shoulder ... ..	—	2	—	—	—	1	—	—	—	—
Elbow ... ..	2	—	—	—	—	3	—	—	—	—
Wrist ... ..	—	4	—	—	—	—	—	—	—	—
Dactylitis ... ..	2	—	—	—	—	3	1	—	—	—
Metacarpal ... ..	1	—	—	—	—	—	—	—	—	—
Sternum ... ..	—	—	—	—	—	1	—	—	—	—
Rib . ... ..	1	1	—	—	—	—	—	—	—	—
Tenosynovitis ... ..	—	1	—	—	—	—	—	—	—	—
Bursitis ... ..	—	1	—	—	—	1	—	—	—	—
Skin ... ..	2	4	—	—	—	2	—	—	—	—
Peripheral glands ... ..	4	4	—	—	—	17	1	—	—	—
Peritonitis ... ..	11	9	1	—	—	17	2	2	1	1
Lungs ... ..	—	—	1	—	—	—	1	—	—	—
Chronic empyema ... ..	—	—	—	—	—	—	1	—	—	—
Genito-urinary ... ..	—	5	—	—	1	—	—	—	—	—
Ischio-rectal abscess ... ..	1	1	—	—	—	—	—	—	—	—
Psoas abscess ... ..	—	1	—	—	—	—	—	—	—	—
Multiple lesions ... ..	4	4	2	—	2	5	—	—	—	1
Combined pulmonary and non-pulmonary ... ..	13	10	7	—	13	2	—	—	—	1
Total ... ..	88	68	14	1	21	83	11	4	1	3



ARTIFICIAL LIGHT TREATMENT AND SALT-FREE DIET.



W.1(a).—W. J. P., male, aged 47. Lupus for 38 years. Previous treatment, diathermy, artificial light (local and general). Lesion refused to heal. Patient sent to Wrightington Hospital.  
[*Photograph taken at Fleetwood Dispensary.*]



W.1(b).—Same patient. Photograph taken 15-11-33 after six months' treatment at Wrightington Hospital with general light baths and a salt-free diet. Lupus healed.  
[*Photograph taken at Wrightington Hospital.*]



## BONE AND JOINT TUBERCULOSIS.



W.2(a).—D.T., female, aged 4. Antero-posterior view of right knee showing considerable swelling with flexion. Joint tense and painful.



W.2(b).—Same patient. Lateral view.

[Photographs taken at Wrightington Hospital.]



## BONE AND JOINT TUBERCULOSIS (contd.).



W.2(c).—Same patient. Antero-posterior view of right knee after 18 months' treatment on a Thomas bed splint. Photograph shows subsidence of swelling and flexion deformity. Patient discharged from hospital wearing a walking caliper.

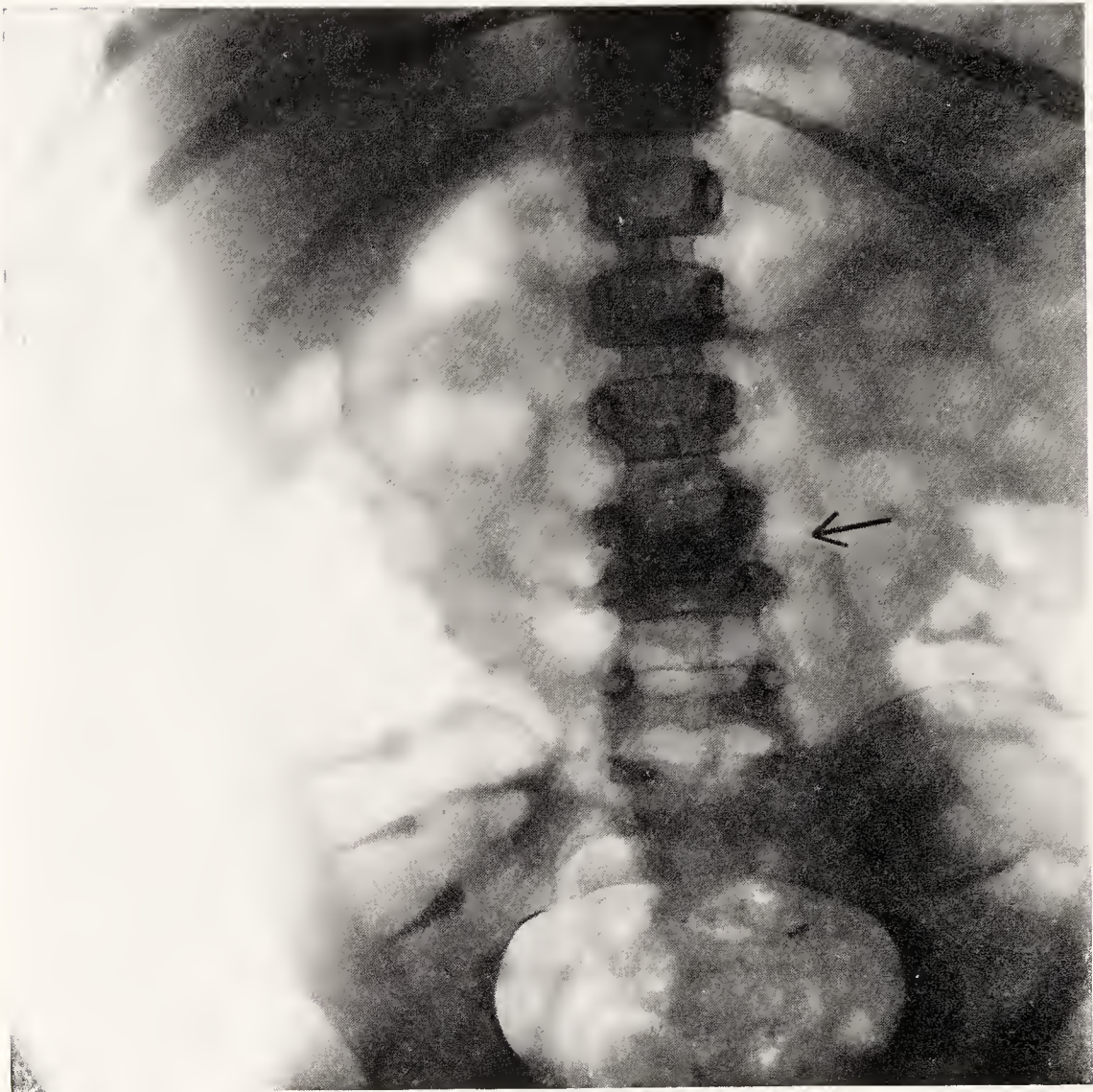


W.2(d).—Same patient. Lateral view.

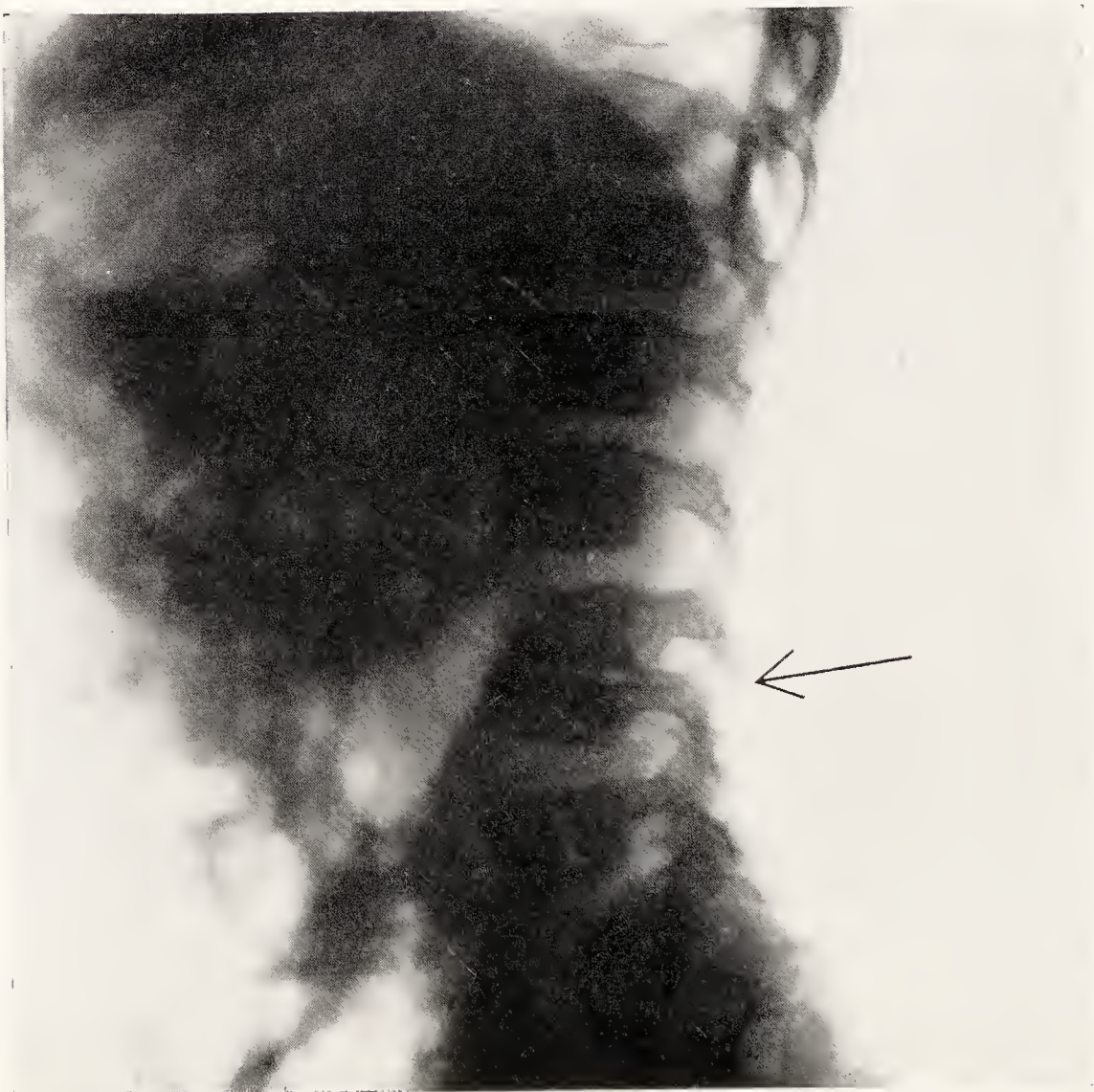
[Photographs taken at Wrightington Hospital.]



## SPINAL TUBERCULOSIS.



W.3(a).—S.R., male, aged 9. Lumbar spine. Antero-posterior view. Skiagram taken 16-6-32 shows disease of the third and fourth lumbar vertebrae with diminution of the intervertebral space and irregularity of the adjacent vertebrae.

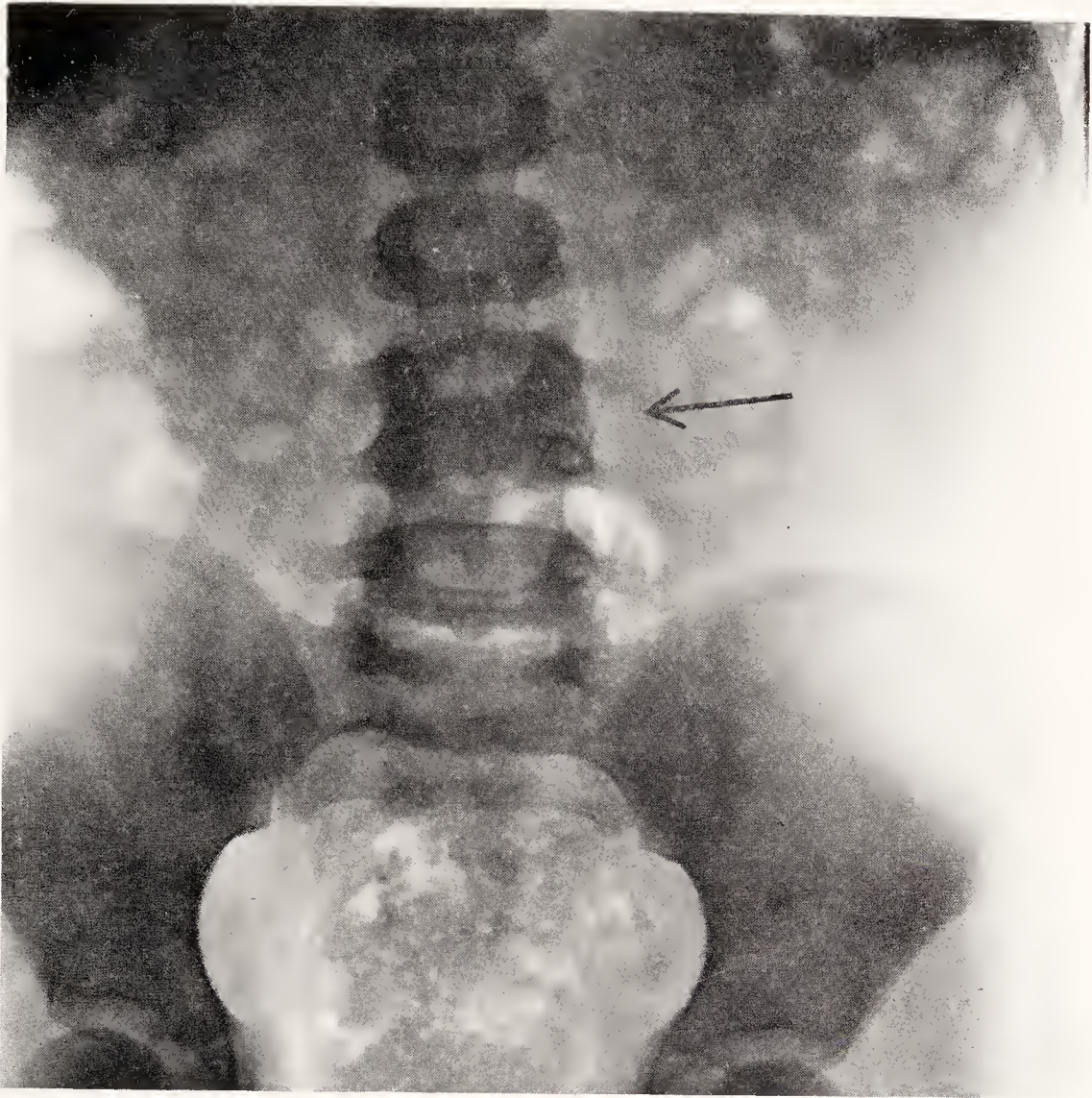


W.3(b).—Same patient. Lateral view. Skiagram taken 16-6-32 shows disease of the third and fourth lumbar vertebrae and contraction of the joint space and irregularity of outline of the bodies.

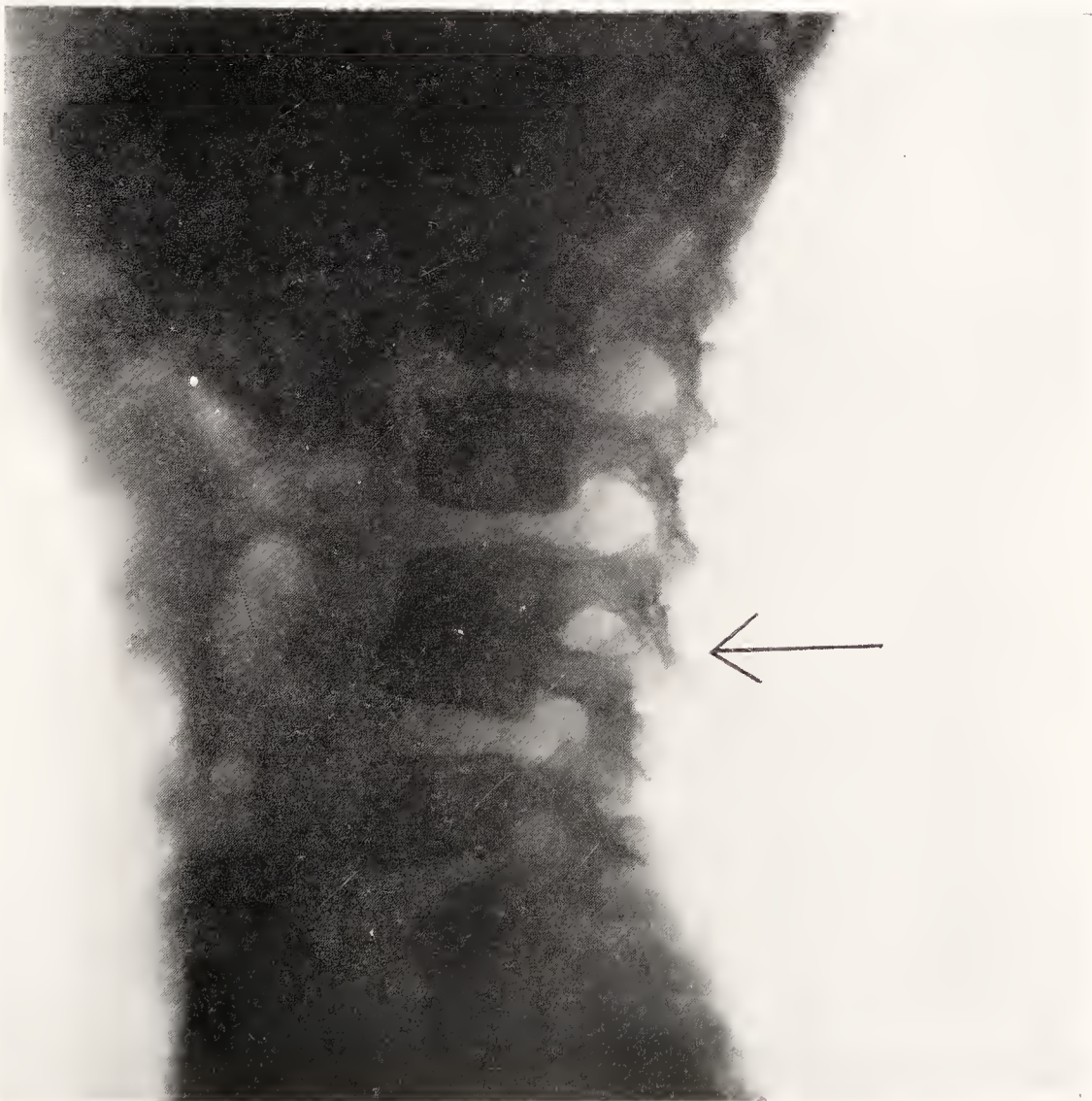
[Skiagrams taken at Wrightington Hospital.]



## SPINAL TUBERCULOSIS (contd.).



W.3(c).—Same patient. Antero-posterior view. Skiagram taken 11 months after skiagram W.3(a) shows healing of the lesion. The intervertebral space is obliterated and the two vertebrae have become fused.



W.3(d).—Same patient. Lateral view. Skiagram taken 11 months after skiagram W.3(b) shows complete fusion of the affected vertebrae. The intervertebral space has disappeared and the two bodies have virtually become one.

[Skiagrams taken at Wrightington Hospital.]





A few cases of lupus have been admitted which proved resistant to light treatment at the dispensaries, and in some instances very good results have been obtained on a salt-free diet—not the strict Gerson regime but merely the hospital diet excluding salt. This form of treatment is well worth further trial and is being continued. Photographs W. 1 (a) and 1 (b) here inserted, show the improvement which has taken place in a patient as the result of a salt-free diet and general light baths.

Cases of abdominal tuberculosis have responded well to raw tomato juice—2 ozs. being given per day—so much so that it is now prescribed as a routine for this type of case. I would again stress the bad results seen after operative measures in cases of abdominal tuberculosis.

Sanocrysin has been tried on 16 non-pulmonary cases, but speaking generally the results have not been so good as for pulmonary tuberculosis. Multiple skin lesions respond better to this form of treatment than the bone and joint cases.

During the year, 665 blood sedimentation tests have been made. This test has proved itself of value from a prognostic point of view and as an index of the response of the patient to treatment.

The combined cases as a whole do not lend themselves to collapse therapy; generally the lung lesions are too extensive. However, in two cases artificial pneumothorax was done with satisfactory results.

The intravenous injection of uroselectan B. for the investigation of cases of renal tuberculosis has been continued—a full description of this method was given in last year's report. Sixteen cases were submitted to this examination during 1933, and the information obtained fully justifies its use.

During the year the Mantoux test has been used as a routine on all children admitted; 136 tests have been carried out, and of these 123 proved positive and 13 negative. The negative cases included the following:—Köhler's disease, lymphadenoma, contusion spine, enteritis, enlarged cervical glands due to sepsis, staphylococcal abscess thigh, pyogenic abscess axilla, and osteo-myelitis foot.

The following is a list of the operations performed during 1933:—

Arthrodesis of joints—hip 4, knee 6; excision of bones and joints—sacro-iliac 1, head of femur 4, head of humerus 1, metatarsal 1; amputations—thigh 2, leg 1, arm 1, finger 5; osteotomy—femur (transtrochanteric) 3, femur (supracondylar) 1, tarsus (cuneiform) 1; Albee spinal graft 1; laminectomy 1; fixation of knee-joint 1; synovectomy knee-joint 1; resection of rib 6; sequestrotomy 5; excision of bursa 1; tubercular glands—removal 12, incision and curettage 15; incision and curettage of sinuses 10; fistula in ano 2; abscesses opened 50; joint manipulation under general anæsthetic 2; lumbar puncture 1; circumcision 2; excision sebaceous cyst 1; and aspirations 223.

From these figures it will be seen that operative procedures in tuberculosis have a limited use. In children they are largely confined to correcting deformities when the disease has become quiescent. In adults, before operation is considered, a most careful examination of the patient is necessary in order to exclude the possibility of a second tuberculous lesion being present—by no means a rare occurrence. Our experience shows that the optimum time for operation is when the disease has become largely quiescent. It is only then that a fixation operation on the spine is indicated by means of a bone graft. Arthrodesis operations on the hip are useful when symptoms of activity have subsided and there is a likelihood of an unstable joint resulting. Excision of knee is a satisfactory operation in adults, but, here again, a preliminary period of rest in bed and all that sanatorium treatment implies is essential for the best results. Amputation is indicated where the lesion, in spite of sanatorium treatment, tends to progress.

There were 98 plasters applied, and 21 casts taken for the making of celluloid splints. The latter, which provide a light and durable support for special cases, are made at the hospital by the nursing staff, finished off by a special process in order to render them non-inflammable, and then sent away for binding, etc.

The artificial light department has worked to full capacity and 291 patients received light treatment during 1933, an increase of 64 compared with the previous year. The lamps, carbons, and technique employed are the same as last year.

Examinations of the following specimens have been made in the hospital laboratory :—Pus 32, blood 10, urine 41, cerebro-spinal fluid 3, pleural fluid 1, gland of neck 1, and meninges of brain 1. Sputum—hospital patients 65 (positive 20, negative 45) ; dispensary patients 723 (positive 134, negative 589).

Seven post-mortem examinations were carried out, and from these, as well as from post-operative material, a number of pathological specimens have been mounted, which will prove of use for teaching purposes.

Material for guinea-pig inoculation and special pathological investigation, which has been sent away for examination, consisted of :—Urine 16, pus 13, glands 4, pathological fluids 4, throat swabs for diphtheria 2, supra-renal gland 1, synovial membrane 1, vaginal tissue 1, and bone tissue 1.

In addition to the hospital, the x-ray work of the Wigan County Sub-Area and the Heath Charnock Pulmonary Hospital is done at



Wrightington. During 1933, the following skiagrams were taken :— Hospital patients 1,521, dispensary patients 487, Heath Charnock patients 33, total 2,041, which is an increase on the figures for the previous year.

The number of patients in the institution on the 31st December, 1933, who were having special treatment was as follows :—

Artificial pneumothorax	...	...	...	1
Sanocrysin	...	...	...	4
Artificial light	...	...	...	109

Mr. Platt and Mr. McMurray, the consulting orthopædic surgeons, have paid monthly visits during the year, and I greatly appreciate their valuable advice and help.

Mr. Bywater has visited the hospital periodically to see eye cases which have been referred to him.

The outstanding event of the year was the official opening of the hospital on the 16th June, 1933, by Sir George Newman, an account of which was contained in the report for last year.

The Lancashire and Cheshire Branch of the British Medical Association held a scientific meeting at Wrightington on the 10th May, 1933 ; 120 members attended and an address of welcome was given by County Alderman E. Boothman, Chairman of the Sanatorium Sub-Committee. The following papers were given by the visiting consulting orthopædic surgeons :—“ Pott's Disease,” by Mr. Harry Platt, F.R.C.S., and “ Differential Diagnosis of Surgical Conditions of the Hip,” by Mr. T. P. McMurray, F.R.C.S. A tour of the hospital was made by the members, and tea terminated a most successful meeting.

Other visitors to the hospital during the year included :—

Oldham Public Health Committee.  
 County Tuberculosis Health Visitors.  
 Ashton-under-Lyne and District Tuberculosis Care Committee.  
 North-Western Tuberculosis Society (Summer Meeting).  
 Horwich Care Committee.  
 Miss R. Cox-Davies of the General Nursing Council.  
 Dr. Harley Williams of the National Association for the Prevention of Tuberculosis.  
 Blackpool Public Health Committee.  
 Liverpool Branch of the Public Health Section of the College of Nursing.  
 Wigan County District Care Committee.

As most of the patients at Wrightington are confined to bed, their capacity for recreation is of necessity somewhat limited as contrasted with a sanatorium where a large proportion are up and about. Every effort is made to cater for their amusement. At Christmas the nursing staff provided an excellent concert which was given in each ward and

greatly appreciated by all. The children themselves provided a pantomime, "The Sleeping Beauty," produced by Mrs. Keyworth and her assistant teachers. Numerous entertainments, concerts, and plays have been given during the year by friends of the hospital, and our thanks are due to them for coming to amuse the patients. There is a well-stocked library for both patients and staff, and cinema films have been exhibited in the wards during the winter months.

The religious needs of the various denominations are provided for, and our thanks are due to the various ministers who visit Wrightington, *viz.*, Rev. C. E. Brett, Upholland, and Rev. R. Schofield, Wrightington, Church of England; Rev. W. Gainsborough, Nonconformist; and Rev. Fr. Barry, Roman Catholic. Mr. Brett has now been transferred to Liverpool. We are sorry to lose his services and wish him every success in his new sphere.

The education classes for adult patients, which were begun last year, have been continued with success, and promise to be a permanent feature of the routine of the institution. Apart from their purely educational value, I consider that they are well worth while from a medical point of view, and are a definite aid to recovery, as they provide an added interest to the patients and prevent boredom and ennui. We are fortunate in having the services of Mr. James and Mr. Bruce as lecturers on current events and social history. They take considerable trouble to adapt their subject matter to the needs of what is of necessity a mixed audience. Discussion, which is invited at the end of each lecture, becomes, at times, quite animated, and is evidence of the interest taken by the patients.

Miss Roll instructs the adult patients in handicrafts; this subject is a very popular one and appeals especially to the younger adults. It would be an advantage if another instructor could be appointed to assist Miss Roll, as it is impossible for her to give as much instruction in this subject as the patients demand. I have frequent requests from the patients themselves for more handicraft instruction.

The education of the children is in the capable hands of Mrs. Keyworth, who has two assistants. I append her report:—

Number admitted during the school year, 200. Discharges, 102.  
Average number on books, 90. Average attendance, 84.

Children are admitted to the school registers at the age of two years and discharged at the age of 16. Babies up to five years old are taught by means of Montessori sense training apparatus and music, particularly rhythm. Children from 7 to 16 years of age are taught by means of individual work throughout with a generous supply of text books. They are grouped more or less according to age, but this does not mean necessarily that they are at the same stage of education, owing to the fact that their school life has been interrupted by their physical con-



dition. By means of individual work no one child has to wait for another, but pushes on at its own pace from its own text books, so that a boy doing elementary algebra and geometry may be lying side by side with a boy learning letters and figures.

The whole morning is devoted to the usual elementary school curriculum.

The afternoon session is given up entirely to handwork and music consisting of singing and rhythm, the latter being expressed by means of a percussion band.

The following are the crafts taught in the afternoon:—Pewter and brass overlay, cane and seagrass seating of stools and chairs, French polishing and staining stools, fuming and wax polishing stools, chip carving, painting on whitewood, soft toy making, plain sewing and embroidery, simple garment making in knitting and sewing, raffia work on canvas, and rug-making.

A ready sale is found for finished work amongst parents and staff, the year's takings being £65 as compared with £62 last year.

The Lancashire Education Committee kindly reserved a space at the Royal Lancashire Agricultural Show, held at Salford in August, 1933, for a show of handwork made by the children. The Director of Education recorded his appreciation of the standard of the work.

Records are kept of each child's educational progress during its stay in hospital. Entries are made on admission and on discharge. Several big boys and girls, unable to attend school regularly owing to ill-health, have been admitted with no, or very scanty, knowledge of reading, and in every case the child has been able to read more or less fluently on discharge—extra time being devoted to backward cases. The average intelligence of this type of child in hospital compares in its favour with the normal child in the elementary school. Research work has proved that children living under these conditions of nourishing food, cleanliness, plenty of sleep, and regular habits generally, have in spite of physical disabilities a higher average intelligence than the same class of children living in a city.

Convalescent children have extra tuition including a dancing class, walking exercise, and games.

There is a school garden surrounding a flagstaff which is topped by a weather-vane and in full view of the children's wards. Keen interest is shown in the garden, and lessons are given on the flowers as they appear.

Probationer nurses come for a period of two years' training, and at the end of that time are given an examination in nursing, elementary anatomy, physiology, and hygiene. The number of probationer nurses who were successful in passing this hospital examination during 1933 was 11. Some nurses at the end of two years proceed to a general hospital for training, making their own arrangements. Wrightington Hospital has now been recognised as a training centre by the General Nursing Council, thus enabling nurses to sit for the Preliminary State Examination at the end of their period of training here. Successful candidates then proceed to the Bury, Warrington or Wigan Infirmaries (which are affiliated to Wrightington Hospital) and are excused a year of their general training.

My thanks are due to the various members of the medical, nursing, and clerical staffs for their loyal co-operation and willing assistance rendered during the year.

- (7) PEEL HALL PULMONARY HOSPITAL (DISPENSARY AREA No. 4).
- (8) RUFFORD PULMONARY HOSPITAL (DISPENSARY AREA No. 5).
- (9) WITHNELL PULMONARY HOSPITAL (DISPENSARY AREA No. 2).
- (10) WOLSTENHOLME PULMONARY HOSPITAL (DISPENSARY AREA No. 3).

It has already been explained in the chapter on the dispensary organisation (pages 64 and 65), that the Administrative County, containing a population of 1,802,730, is divided into five large dispensary areas, with an average population of 320,000, each area being in the charge of a consultant tuberculosis officer who has two assistant tuberculosis officers and other staff. The aim of the County Council has been to provide in each area a pulmonary hospital containing about 50 beds for the diagnosis of observation cases and the treatment of intermediate and advanced cases of pulmonary tuberculosis near their homes, the consultant tuberculosis officer of the particular dispensary area acting as the visiting medical superintendent. In addition to the five large areas there are three dispensary sub-areas—Furness, Fylde, and Wigan County—in the charge respectively of the medical superintendents of the High Carley Sanatorium, the Elswick Sanatorium, and the Wrightington Hospital. Thus, the dispensary side of the work is not divorced from the institutional side.

The report for each of the above-named hospitals is contained in the report of the consultant tuberculosis officer for the area, *viz.*, for Peel Hall in Dispensary Area No. 4, page 91 ; for Rufford in Dispensary Area No. 5, page 97 ; for Withnell in Dispensary Area No. 2, page 81 ; and for Wolstenholme in Dispensary Area No. 3, page 86.

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## XXVIII.—DENTAL TREATMENT.

Patients eligible for dental treatment are those who, in the opinion of the medical superintendent or the tuberculosis officer, are unable to derive full benefit from their treatment for tuberculosis owing to defective teeth. Patients already covered by dental schemes of other bodies, *e.g.*, school children at home and tuberculous pensioners, are excluded from benefit. For insured persons who are tuberculous many approved societies make a contribution towards the cost of dental attention required.

At the following County sanatoria and hospital the dental work is carried out by a visiting dentist:—High Carley, Oubas House, Elswick, and Wrightington.

The statement below shows the dental work carried out during 1933, under the scheme approved by the County Council:—

TABLE 42.

Institution.	Number of individual patients who received dental attention.	New dentures provided.		Repairs to dentures.	Extractions.	Fillings.	Scalings and cleanings.	Other operations.
		Complete sets.	Partial sets.					
High Carley ...	173	25	8	11	279	91	2,515	341
Oubas House (Children) ...	11	—	—	—	6	2	55	13
Elswick ...	72	2	6	2	213	12	76	61
Wrightington ...	173	13	18	19	425	117	373	532
Other sanatoria and hospitals ...	56	22	8	12	465	1	4	—
Dispensary patients	39	23	9	7	377	1	1	3
TOTAL ...	524	85	49	51	1,765	224	3,024	950

The dental scheme, considering the benefit derived by the patients, has proved economical, and continues to be justified.

## XXIX.—INSTITUTIONAL ACCOMMODATION.

On the 31st December, 1933, there were altogether 875 beds at sanatoria and hospitals occupied by County patients, as compared with 931 at the end of 1932. The number of beds occupied by pulmonary cases worked out at 60 per 100 pulmonary deaths. For non-pulmonary tuberculosis the proportion was 113 beds per 100 non-pulmonary deaths.

Table 43 below gives a summary of the beds occupied at the end of 1933 at the several types of institutions, the names of which are contained in Appendix X.

Type of institution.	Pulmonary tuberculosis.		Non-pulmonary tuberculosis.		Total.
	Adults.	Children.	Adults.	Children.	
Sanatoria ... ..	283	30	—	2	315
Pulmonary hospitals ... ..	262	1	—	—	263
Training colonies ... ..	4	—	6	—	10
Observation cases ... ..	6	5	9	4	24
General hospitals ... ..	—	—	3	3	6
Hospitals for non-pulmonary tuberculosis ... ..	18	3	91	144	256
Skin hospital ... ..	—	—	1	—	1
Total ... ..	573	39	110	153	875
	612		263		

The number of beds in occupation by County patients on the 31st December of each year is as follows :—1926, 825 ; 1927, 819 ; 1928, 858 ; 1929, 874 ; 1930, 906 ; 1931, 875 ; 1932, 931 ; and 1933, 875.

Of the 875 beds occupied, 654 were in sanatoria or hospitals belonging to the County Council, and 221 were in non-County institutions.

Of the 612 beds occupied by pulmonary patients, 77 per cent. of the cases were classified as “T.B. plus,” that is, sometime during treatment their sputum was positive.

There is a greater demand for beds in the summer than in the winter, and the number of beds in use consequently fluctuates during the course of the year, as will be seen from the following statement showing the number of beds occupied at the end of each quarter during 1933 :—

On 31st March	...	...	...	...	916 beds.
„ 30th June	...	...	...	...	944 „
„ 30th September	...	...	...	...	921 „
„ 31st December	...	...	...	...	875 „



The list of patients waiting for institutional treatment averaged at monthly periods during 1933, was as follows :—Sanatoria, adults 26, children 1 ; pulmonary hospitals, adults 23 ; special hospitals, adults 13, children 9 ; general hospitals, adults 3.

A return was obtained from the medical superintendents of Public Assistance hospitals of the number of patients suffering from tuberculosis chargeable to the Lancashire County Council who were in such hospitals on the 31st December, 1933. The following statement has been prepared from the returns so furnished :—

TABLE 44.

	Patients in Public Assistance hospitals on 31st December, 1933.			
	Adult males.	Adult females.	Children.	Total.
Pulmonary tuberculosis ... ..	17	8	1	26
Non-pulmonary tuberculosis ... ..	7	7	10	24
				50

The foregoing total of 50 cases (compared with 63 at end of 1932) in Public Assistance hospitals contains those tuberculous patients whose mental condition, or other complication, does not permit of their being treated in sanatoria and hospitals. Every effort is made to transfer as soon as possible patients who require special treatment for tuberculosis to the sanatoria and hospitals provided for such treatment.

Further particulars of the residential treatment for tuberculous patients in Public Assistance hospitals are given in Appendix VII.

### XXX.—HOME TREATMENT AND DISPENSARY TREATMENT OR SUPERVISION.

All notified cases of tuberculosis while at home are under the supervision of the tuberculosis officers and tuberculosis health visitors, in addition to the treatment that may be obtained from their medical attendants. Ordinary medical treatment at dispensaries (as distinct from special treatment such as artificial light and artificial pneumothorax) has never been undertaken, unless the patient has no doctor or requires some special form of treatment. The number of consultations with medical practitioners in 1933 was as follows :—Personal, 667 ; otherwise, 5,668 ; total, 6,335.

### XXXI.—TREATMENT AND OCCUPATIONAL TRAINING : VILLAGE SETTLEMENTS.

The subject of this chapter was reviewed in the annual report for 1928.

The following table gives particulars of the patients so far granted a course of treatment combined with training :—

TABLE 45.

Classifica- tion on admission.	TOTAL NUMBER ADMITTED.		Total number dis- charged.	Average duration of stay at colony* (months).	PATIENTS DISCHARGED (1920 to 1933).			Still undergoing training, 31st December, 1933.
	August, 1920 to Dec., 1932.	1933.			Course of training completed.	Training terminated before completion of course.	Transferred to sanatoria or hospitals.	
T.B. minus ...	38	1	38	15·00	19	19	—	1
T.B. plus 1 ...	28	—	27	15·75	9	16	2	1
T.B. plus 2 ...	34	2	34	14·25	15	15	4	2
T.B. plus 3 ...	3	—	3	12·00	1	2	—	—
Non- pulmonary	12	1	7	23·00	2	5	—	6
	115	4						
Total.	119		109	15·25	46	57	6	10

\* Average duration relates to patients who completed course.

Considering that the 119 patients sent for training were carefully selected by the tuberculosis officers, the results, as measured by the number completing the course, are not so satisfactory as might be expected.



## APPENDIX I.

DEATH-RATES for 1933 from tuberculosis in 116 urban and rural districts in Lancashire, and in the 8 County dispensary areas.

Sanitary district.	Estimated population, 1933.	Pulmonary tuberculosis.			Non-pulmonary tuberculosis.	
		Number of deaths, 1933.	Death-rate per 1,000 of population, 1933.	Average death-rate 5 years, 1928-32.	Number of deaths, 1933.	Death-rate per 1,000 of population, 1933.
URBAN						
Abram ... ..	6,790	3	0.44	0.60	2	0.29
Accrington (B)... ..	41,930	20	0.47	0.62	2	0.04
Adlington ... ..	4,221	3	0.71	0.97	1	0.23
Ashton-in-Makerfield ...	20,230	6	0.29	0.41	2	0.09
Ashton-under-Lyne (B)	50,540	37	0.73	0.76	9	0.17
Aspull ... ..	6,929	6	0.86	0.45	1	0.14
Atherton ... ..	20,430	11	0.53	0.50	2	0.09
Audenshaw ... ..	9,126	3	0.32	0.59	2	0.21
Bacup (B) ... ..	20,320	14	0.68	0.51	2	0.09
Barrowford ... ..	5,172	1	0.19	0.33	1	0.19
Billinge and Winstanley	5,118	3	0.58	0.76	4	0.78
Blackrod ... ..	3,564	2	0.56	0.42	1	0.28
Brierfield ... ..	7,652	4	0.52	0.62	—	—
Carnforth ... ..	3,229	—	—	1.00	1	0.30
*Chadderton ... ..	27,670	16	0.57	0.61	5	0.18
Chorley (B) ... ..	30,520	13	0.42	0.47	6	0.19
Church ... ..	6,030	3	0.49	0.43	1	0.16
Clayton-le-Moors ... ..	7,650	1	0.13	0.48	—	—
Clitheroe (B) ... ..	11,870	2	0.16	0.49	1	0.08
Colne (B) ... ..	23,380	18	0.76	0.64	7	0.29
Crompton ... ..	14,560	7	0.48	0.58	2	0.13
Croston ... ..	1,878	1	0.53	0.09	—	—
Dalton-in-Furness ... ..	10,270	13	1.26	1.05	2	0.19
Darwen (B) ... ..	34,870	14	0.40	0.38	1	0.02
Denton ... ..	17,870	10	0.55	0.53	2	0.11
*Droylsden ... ..	15,110	11	0.72	0.81	—	—
*Eccles (B) ... ..	43,970	27	0.61	0.64	6	0.13
Failsworth ... ..	15,800	12	0.75	0.56	2	0.12
Farnworth ... ..	28,300	12	0.42	0.60	4	0.14
Fleetwood (B) ... ..	23,430	18	0.76	0.53	4	0.17
Formby ... ..	8,448	5	0.59	0.55	—	—
Fulwood ... ..	7,548	—	—	0.22	2	0.26
*Golborne ... ..	14,095	8	0.86	0.63	—	—
Grange-over-Sands ... ..	2,332	1	0.42	0.51	—	—
Great Crosby ... ..	22,170	7	0.31	0.40	1	0.04
Great Harwood ... ..	12,310	3	0.24	0.44	5	0.40
Haslingden (B) ... ..	16,280	5	0.30	0.49	3	0.18
Haydock ... ..	10,290	3	0.29	0.56	3	0.29
*Heywood (B) ... ..	26,389	14	0.54	0.70	3	0.11
Hindley ... ..	21,170	15	0.70	0.77	3	0.14
Horwich ... ..	15,320	8	0.52	0.46	1	0.06
Huyton-with-Roby ... ..	5,629	2	0.35	0.60	—	—
Ince-in-Makerfield ... ..	22,240	20	0.89	0.78	5	0.22
Irlam ... ..	13,030	9	0.69	0.58	2	0.15
*Kearsley ... ..	11,095	6	0.55	0.70	1	0.09
Kirkham ... ..	4,084	3	0.73	0.96	—	—
Lancaster (B) ... ..	44,470	32	0.71	0.60	4	0.08
Lees ... ..	4,602	3	0.65	0.44	2	0.43
Leigh (B) ... ..	45,190	31	0.68	0.61	5	0.11
Leyland ... ..	10,960	6	0.54	0.30	1	0.09
Litherland ... ..	16,620	24	1.44	1.11	3	0.18
Littleborough ... ..	11,880	4	0.33	0.33	—	—
**Little Hulton ... ..	—	4	2.10	0.45	1	0.52
Little Lever ... ..	4,900	2	0.40	0.46	—	—
Longridge ... ..	4,116	5	1.21	0.47	—	—
Lytham St. Annes (B)... ..	24,910	12	0.48	0.41	2	0.08
Middleton (B) ... ..	29,010	16	0.55	0.59	2	0.06
Milnrow ... ..	8,460	4	0.47	0.43	—	—
Morecambe and Heysham (B)	26,040	8	0.30	0.52	2	0.07
Mossley (B) ... ..	11,780	7	0.59	0.44	—	—
Nelson (B) ... ..	37,710	17	0.45	0.52	7	0.18
Newton-in-Makerfield	20,340	13	0.63	0.82	5	0.24
†Norden ... ..	—	1	0.29	0.49	1	0.29

## APPENDIX I. (contd.).

Sanitary district.	Estimated population, 1933.	Pulmonary tuberculosis.			Non-pulmonary tuberculosis.	
		Number of deaths, 1933.	Death-rate per 1,000 of population, 1933.	Average death-rate 5 years, 1928-32.	Number of deaths, 1933.	Death-rate per 1,000 of population, 1933.
URBAN (contd.)						
Ormskirk ... ..	17,410	14	0·80	0·58	—	—
Orrell ... ..	7,162	4	0·55	0·28	1	0·13
Oswaldtwistle ... ..	13,810	8	0·57	0·58	2	0·14
Padiham ... ..	11,490	6	0·52	0·53	3	0·26
Poulton-le-Fylde ... ..	3,246	1	0·30	0·37	—	—
Preesall ... ..	2,103	—	—	0·48	—	—
Prescot ... ..	11,490	10	0·87	0·64	1	0·08
Prestwich ... ..	26,100	14	0·53	0·49	3	0·11
*Radcliffe ... ..	27,070	17	0·67	0·67	3	0·11
Rainford ... ..	3,586	3	0·83	0·48	—	—
*Ramsbottom ... ..	15,362	10	0·66	0·63	2	0·13
Rawtenstall (B) ... ..	28,130	16	0·56	0·44	7	0·24
Rishton ... ..	6,396	3	0·46	0·82	—	—
Royton ... ..	16,670	9	0·53	0·80	1	0·05
Skelmersdale ... ..	6,109	4	0·65	0·45	2	0·32
Standish-with-Langtree	7,461	—	—	0·50	—	—
*Stretford (B) ... ..	57,230	47	0·82	0·67	7	0·12
*Swinton and Pendlebury	38,300	16	0·42	0·53	2	0·05
Thornton Cleveleys ... ..	10,400	7	0·67	0·72	—	—
Tottington ... ..	6,275	2	0·31	0·21	1	0·15
Trawden ... ..	2,508	1	0·39	0·30	—	—
Turton ... ..	11,580	8	0·69	0·49	—	—
*Tyldesley ... ..	19,150	11	0·69	0·52	4	0·25
Ulverston ... ..	9,323	7	0·75	0·54	—	—
Upholland ... ..	5,711	—	—	0·48	—	—
*Urmston ... ..	25,283	9	0·41	0·60	—	—
Walton-le-Dale ... ..	12,970	4	0·30	0·65	2	0·15
Wardle ... ..	4,453	1	0·22	0·34	2	0·44
Waterloo-with-Seaforth	30,550	32	1·04	0·90	7	0·22
Westhoughton ... ..	15,820	6	0·37	0·53	—	—
*Whitefield ... ..	10,321	1	0·09	0·68	1	0·09
Whitworth ... ..	8,206	6	0·73	0·77	—	—
Widnes (B) ... ..	41,380	39	0·94	0·92	9	0·21
Withnell ... ..	2,903	—	—	0·63	1	0·34
‡Worsley ... ..	22,427	4	0·19	0·43	5	0·24
*Total Urban ... ..	1,570,232	909	0·58	0·59	203	0·13
RURAL						
§Barton-upon-Irwell ... ..	—	2	0·42	0·52	—	—
Blackburn ... ..	11,520	6	0·52	0·26	1	0·08
Burnley... ..	17,660	9	0·50	0·53	—	—
¶Bury ... ..	—	1	0·22	0·45	—	—
Chorley ... ..	22,240	3	0·13	0·40	3	0·13
Clitheroe ... ..	8,805	3	0·34	0·28	—	—
Fylde ... ..	18,160	8	0·44	0·34	4	0·22
Garstang ... ..	11,640	2	0·17	0·25	3	0·25
Lancaster ... ..	9,564	4	0·41	0·37	—	—
†Leigh ... ..	—	1	0·11	0·54	1	0·11
Limehurst ... ..	8,536	4	0·46	0·51	1	0·11
Lunesdale ... ..	6,574	2	0·30	0·33	—	—
Preston ... ..	31,710	17	0·53	0·34	5	0·15
Ulverston ... ..	16,430	6	0·36	0·44	—	—
*Warrington ... ..	15,530	8	0·51	0·51	2	0·12
West Lancashire ... ..	26,190	10	0·38	0·42	3	0·11
Whiston ... ..	21,470	11	0·51	0·37	5	0·23
Wigan ... ..	6,469	4	0·61	0·59	1	0·15
*Total Rural ... ..	232,498	101	0·40	0·41	29	0·11
*Total for Adminis- trative County ... ..	1,802,730	1,010	0·55	0·57	232	0·12
DISPENSARY AREAS						
No. 1 ... ..	269,488	122	0·44	0·46	35	0·12
No. 2 ... ..	337,073	162	0·48	0·50	43	0·12
*No. 3 ... ..	365,790	210	0·56	0·61	44	0·11
No. 4 ... ..	359,220	206	0·57	0·58	40	0·11
No. 5 ... ..	257,212	185	0·71	0·68	41	0·15
Furness Sub-Area ... ..	38,355	27	0·70	0·63	2	0·05
Fylde Sub-Area ... ..	66,312	37	0·60	0·53	8	0·13
Wigan County Sub-Area	109,280	61	0·55	0·60	19	0·17

For footnotes see next page.



- \* Consequent on the alteration of boundaries on the 1st April and the 1st October, 1933, the death-rates have been calculated on an adjusted population supplied by the Registrar-General. For the Administrative County such adjusted population was: Urban districts 1,557,480; Rural districts, 250,320; Total, 1,807,800.
  - \*\* On the 1st April, 1933, the Urban District of Little Hulton was amalgamated with the Urban District of Worsley. The rates are based on the deaths up to that date, and calculated on an adjusted population of 1,900.
  - † Abolished as from the 1st October, 1933; the rates are based on the deaths up to that date, and calculated on the following adjusted populations: Norden, 3,335; Leigh Rural, 8,470.
  - ‡ On the 1st April, 1933, the Urban District of Little Hulton was amalgamated with the Urban District of Worsley. The statistics include the deaths occurring in the added area from that date, and have been calculated on an adjusted population of 20,600. The 5-year average death-rate relates to the combined areas of Worsley and Little Hulton.
  - § Abolished as from the 1st April, 1933; the rates are based on the deaths up to that date, and calculated on an adjusted population of 4,690.
  - ¶ Area reduced as from the 1st April, 1933, and rural district finally abolished as from the 1st October, 1933. The rates are based on the deaths up to that date, and calculated on an adjusted population of 4,522.
-

## APPENDIX II.

## NOTIFICATION OF TUBERCULOSIS CASES.

Since 1st February, 1913, tuberculosis—both pulmonary and other forms—has been compulsorily notifiable under the Public Health (Tuberculosis) Regulations.

Tables B and C, here inserted, analyse the notifications received, giving the part of the body affected and the age-groups.

Table D, also inserted, compares the male and female notifications since 1913.

TABLE 46.—*Deaths of 295 persons notified as suffering from pulmonary tuberculosis in 1933 which took place within three months of the date of notification.*

Period between date of case notification and death.	Certified cause of death.			Total.
	Pulmonary.		Non- pulmonary	
	Primary.	Secondary.		
Under 1 week ... ..	59	2	9	70
1 to 2 weeks ... ..	33	1	3	37
2 to 3 weeks ... ..	19	1	—	20
3 to 4 weeks ... ..	39	1	—	40
1 to 2 months ... ..	88	2	1	91
2 to 3 months ... ..	34	1	2	37
Total under 3 months ...	272	8	15	295
<div>280</div>				

Included in the above table are 39 deaths which occurred outside the County area.

In addition to the foregoing 295 deaths which occurred within three months of notification, in 25 instances (12 pulmonary and 13 non-pulmonary) death took place *before* the actual receipt of the notification, against 21 (12 pulmonary and 9 non-pulmonary) in the preceding year.



TABLES B, C, AND D,  
ANALYSING  
NOTIFICATIONS UNDER PUBLIC HEALTH  
(TUBERCULOSIS)  
REGULATIONS, 1930.

TABLE B.

ADMINISTRATIVE COUNTY OF LANCASTER.

PUBLIC HEALTH (TUBERCULOSIS) REGULATIONS, 1930.

CORRECTED\* SUMMARY OF NOTIFICATIONS OF PULMONARY AND OTHER FORMS OF TUBERCULOSIS DURING THE FIFTY-TWO WEEKS ENDED 30TH DECEMBER, 1933.

(Collated from Weekly Returns of District Medical Officers of Health.)

NOTIFICATIONS ON SCHEDULE A—Excluding Duplicates.																																	Total Notifi- cations (i.e., including cases previously notified by other Doctors).											
PULMONARY.						NON-PULMONARY.																									Total Pul- monary and Non- Pul- monary.													
Lungs only.	Lungs and Larynx.	Larynx.	Bronchial Glands.	Medastinal Glands.	TOTAL.	BONES AND JOINTS.														ABDOMINAL.			GENITO-URINARY.							PERIPHERAL GLANDS.				MISCELLANEOUS.	TOTAL.									
						Head (including Middle Ear).	Trunk.		Arm.						Leg.						Two or more different joints.	Not Classified.	Intestines.	Peritoneum.	Mesenteric Glands.	Bladder.	Fall. Tube.	Kidney.	Prostate.	Suprarenal.		Testicle and Epididymis.				Not Classified (two or more).	MENINGITIS (Brain).	MILIARY (Generalised).	SKIN (Lupus).	Axillary.	Cervical.	Inguinal.		
							Ribs and Sternum.	Spine.	Shoulder.	Scapula.	Humerus.	Elbow.	Radius.	Ulna.	Hand and Wrist.	Hip and Pelvis.	Femur.	Knee.	Tibia.	Fibula.																							Foot and Ankle.	
Thirteen weeks ended 1st April, 1933 ...	402	4	2	...	...	408	..	2	6	1	...	...	4	...	...	6	10	...	4	1	1	4	1	2	6	29	5	1	2	5	1	...	1	...	14	2	10	2	93	...	2	215	623	685
Thirteen weeks ended 1st July, 1933 ...	431	5	4	...	1	441	...	2	17	...	...	1	1	...	...	3	16	...	7	2	...	7	3	...	1	28	5	...	...	2	...	...	...	13	3	4	3	113	2	9	242	683	765	
Thirteen weeks ended 30th September, 1933...	333	2	1	...	1	337	...	1	12	...	...	...	...	...	...	2	9	1	8	...	...	4	3	...	5	19	7	1	...	...	...	...	2	1	14	2	4	...	71	...	3	169	506	564
Thirteen weeks ended 30th December, 1933...	265	1	1	...	...	267	...	1	13	1	...	...	...	...	...	5	12	...	3	...	...	1	...	...	2	14	5	3	1	...	...	...	4	1	10	1	10	2	61	2	2	154	421	496
Total ...	1431	12	8	...	2	*1453	...	6	48	2	...	1	5	...	...	16	47	1	22	3	1	16	7	2	14	90	22	5	3	7	1	...	7	2	51	8	28	7	338	4	16	*780	*2233	2510

		NOTIFICATIONS ON SCHEDULE A—Excluding Duplicates.																								Number of Cases Notified on Form I. (Admissions).		Number of Cases notified on Form II (Discharges from Institutions).																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
		PULMONARY.												NON-PULMONARY.										Total Pulmonary and Non-Pulmonary.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		AGE-GROUP—YEARS.											TOTAL.		TOTAL M. & F.		AGE-GROUP—YEARS.												TOTAL.		TOTAL M. & F.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
		0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over					0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35		35 to 45								45 to 55	55 to 65	65 and over																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
SEX.												TOTAL.	TOTAL M. & F.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

\* Corrected figures after deducting 48 pulmonary and 51 non-pulmonary cases notified in error by practitioners.



TABLE C.

## ADMINISTRATIVE COUNTY OF LANCASTER.

## PUBLIC HEALTH (TUBERCULOSIS) REGULATIONS, 1930.

ANALYSIS OF THE NOTIFICATIONS ON SCHEDULE A (EXCLUDING DUPLICATES) RECEIVED DURING THE FIFTY-TWO WEEKS  
ENDED 30TH DECEMBER, 1933. († Corrected figures.)

(Collated from Weekly Returns of District Medical Officers of Health.)

AGE—YEARS.		...	0 — 1			1 — 5			5 — 10			10 — 15			15 — 20			20 — 25			25 — 35			35 — 45			45 — 55			55 — 65			65 & over.			TOTAL.			...		
SEX.		Col.	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes	Col.		
PULMONARY—																																									
Lungs only ...		1	1	...	1	4	4	8	10	10	20	18	26	44	69	84	153	83	99	182	184	198	382	169	99	268	154	61	215	83	28	111	26	21	47	801	630	1431	1		
Lungs and Larynx...		2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	1	2	3	1	1	2	1	2	3	1	...	1	1	1	...	...	...	6	6	12	2			
Larynx ...		3	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	1	2	3	1	1	2	...	...	...	1	...	1	1	...	4	4	8	3			
Bronchial Glands		4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	4			
Mediastinal Glands		5	1	...	1	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5			
PULMONARY TOTAL		6	2	...	2	4	4	8	10	10	20	19	26	45	70	85	155	84	101	185	186	201	387	171	102	273	155	61	216	85	29	114	27	21	48	813	640	1453	6		
*Cases—Pulmonary and Non-Pulmonary combined			1	...	1	...	...	...	...	...	...	2	...	2	1	...	1	7	1	8	5	1	6	1	2	3	2	2	4	3	1	4	...	1	1	22	8	30			
NON-PULMONARY—																																									
BONES AND JOINTS	Head— (Incl. Middle Ear) ...	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7		
	Trunk— Ribs and Sternum ...	8	...	...	...	1	1	2	...	...	...	1	...	1	...	...	...	...	...	...	1	1	...	1	1	1	...	...	...	1	...	1	...	...	...	3	3	6	8		
	Spine ...	9	...	...	...	8	7	15	2	2	4	...	4	4	2	...	2	3	2	5	4	7	11	1	1	2	1	1	2	2	1	3	...	...	...	23	25	48	9		
	Arm— Shoulder ...	10	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2	10		
	Scapula ...	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11			
	Humerus ...	12	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12			
	Elbow ...	13	...	...	...	...	...	...	...	...	...	...	1	1	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	13			
	Radius ...	14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14			
	Ulna ...	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15			
	Hand and Wrist	16	2	...	2	4	...	4	1	...	1	...	1	1	...	...	...	1	...	1	1	2	3	...	...	...	...	...	...	2	1	3	1	...	1	12	4	16	16		
	Leg— Hip and Pelvis	17	...	...	...	6	1	7	7	5	12	1	2	3	1	1	2	2	1	3	4	6	10	4	3	7	...	...	...	1	...	1	...	2	2	26	21	47	17		
	Femur ...	18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	18		
	Knee ...	19	...	...	...	1	3	4	4	1	5	1	1	2	1	2	3	...	1	1	2	1	3	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	19		
	Tibia ...	20	...	...	...	2	1	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	20		
	Fibula ...	21	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	21		
	Foot and Ankle	22	...	...	...	4	...	4	1	...	1	1	...	1	1	2	1	1	2	2	...	2	2	...	2	...	2	...	1	1	...	...	...	1	...	1	13	3	16	22	
	Two or more different Joints	23	...	...	...	1	1	2	...	1	1	...	...	...	...	1	...	1	...	1	1	...	1	1	...	...	...	...	1	1	...	...	...	...	...	...	2	5	7	23	
	Not classified	24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	1	1	...	...	...	...	...	...	...	2	2	24	
	ABDOM- INAL	Intestines ...	25	1	...	1	...	2	2	...	...	...	...	1	1	...	...	...	1	1	1	3	4	2	2	4	1	...	1	...	...	...	...	...	...	5	9	14	25		
		Peritonium ...	26	2	...	2	8	5	13	16	3	19	6	9	15	6	6	12	4	5	9	3	8	11	2	5	7	...	...	...	1	1	2	...	...	...	48	42	90	26	
		Mesenteric Glands	27	...	...	...	1	1	2	...	4	4	...	...	...	2	1	3	4	5	9	1	1	2	...	...	...	...	1	1	1	...	1	...	9	13	22	27			
	GENITO- URINARY	Bladder ...	28	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	1	...	1	1	...	1	1	...	...	...	...	...	...	...	...	...	...	5	...	5	28
		Fallopian Tube ...	29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	29	
		Kidney ...	30	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	2	2	...	2	2	...	1	1	2	...	...	...	...	...	...	...	...	...	...	...	30	
Prostate ...		31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	31		
SUPRARENAL	Suprarenal ...	32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	32		
	Testicle and Epididymis	33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	2	...	2	2	...	2	...	...	...	1	...	1	1	...	1	...	7	...	7	33	
Not classified (two or more)		34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2	34
MENINGITIS (Brain) ...		35	2	1	3	16	11	27	1	2	3	2	5	7	2	3	5	...	2	2	2	...	2	...	1	1	1	...	1	...	...	...	...	...	26	25	51	35			
MILIARY (Generalised)		36	1	...	1	1	1	2	1	1	2	1	...	1	1	...	1</																								



TABLE D.

## ADMINISTRATIVE COUNTY OF LANCASTER.

## PUBLIC HEALTH (TUBERCULOSIS) REGULATIONS, 1930.

## MALE AND FEMALE NOTIFIED CASES IN THE ADMINISTRATIVE COUNTY DURING THE YEARS 1913 TO 1933.

PULMONARY TUBERCULOSIS.															NON-PULMONARY TUBERCULOSIS.														
YEAR.	Sex.	0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over	Total.	Total* M. & F.	0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and over	Total.	Total* M. & F.		
1913 (11 months)	M	1	24	97	70	129	131	311	292	228	114	29	1426		29	128	177	137	98	58	71	48	27	18	3	794			
	F	6	28	100	104	158	188	296	201	103	65	25	1274	2700	28	118	134	132	118	86	80	47	29	19	7	798	1592		
1914	M	6	40	80	83	112	172	329	315	240	107	23	1507		43	111	131	95	77	36	47	23	20	14	3	600			
	F	3	32	115	107	140	181	336	225	107	47	20	1313	2820	37	88	98	89	77	44	58	27	12	6	4	540	1140		
1915	M	5	47	97	79	127	138	305	303	235	117	34	1487		39	109	113	93	61	46	50	29	14	5	3	562			
	F	5	27	96	111	152	191	383	239	100	60	21	1385	2872	26	88	107	88	84	53	61	33	15	7	4	566	1128		
1916	M	1	31	71	77	121	157	331	296	190	96	36	1407		20	127	135	99	65	42	47	34	12	13	5	599			
	F	2	24	81	96	165	186	345	220	98	52	13	1282	2689	8	68	122	114	85	46	65	41	19	11	2	581	1110		
1917	M	4	20	77	62	113	104	262	268	190	90	30	1220		21	116	109	105	61	23	42	30	8	9	1	525			
	F	2	22	90	100	129	155	296	185	107	50	19	1155	2375	7	79	97	98	89	59	49	25	23	6	5	537	1062		
1918	M	3	35	55	59	140	108	300	317	232	98	28	1375		14	75	103	65	60	19	29	16	14	7	2	404			
	F	1	24	69	74	139	166	297	207	117	52	13	1159	2534	10	75	84	92	80	46	46	29	9	6	4	481	885		
1919	M	2	22	53	55	94	107	238	212	165	91	17	1056		13	50	97	80	53	26	31	22	19	12	4	407			
	F	5	14	54	80	126	161	261	184	99	41	24	1049	2105	10	59	98	76	61	43	41	29	11	7	5	440	847		
1920	M	2	24	56	63	94	120	281	249	160	90	14	1153		31	62	107	108	68	26	35	23	16	11	5	492			
	F	2	20	53	71	115	122	264	147	84	36	17	931	2084	12	66	86	78	62	46	52	34	23	16	1	476	968		
1921	M	1	17	43	47	94	133	222	225	162	84	19	1047		12	60	110	84	53	32	41	23	17	6	4	442			
	F	...	12	53	77	132	160	255	156	82	50	20	997	2044	15	62	89	81	65	41	53	15	21	9	6	457	899		
1922	M	3	16	38	47	83	120	227	190	148	99	27	998		18	101	111	79	55	37	39	22	13	7	3	485			
	F	4	15	45	57	135	135	202	146	61	42	23	865	1863	13	77	80	95	61	45	50	24	14	7	5	471	956		
1923	M	2	10	41	43	82	132	236	207	147	94	13	1007		18	115	134	105	75	35	45	22	14	15	6	584			
	F	1	14	43	60	115	149	251	149	83	49	16	930	1937	14	103	110	107	68	60	64	31	28	14	5	604	1188		
1924	M	...	27	37	52	105	110	203	199	197	97	18	1045		19	123	92	92	95	35	43	25	17	12	3	556			
	F	3	12	29	55	144	139	223	169	94	49	10	927	1972	6	99	87	94	80	55	72	30	17	11	13	564	1120		
1925	M	...	22	32	38	81	115	212	200	192	74	24	990		17	108	106	73	58	37	53	26	15	12	5	510			
	F	3	10	24	44	144	153	198	136	85	34	25	856	1846	9	86	84	91	82	41	57	33	18	10	6	517	1027		
1926	M	1	9	27	40	91	113	210	198	158	110	23	980		10	90	97	76	75	29	35	32	16	7	3	470			
	F	2	12	41	47	114	169	224	120	68	38	13	848	1828	19	83	94	51	67	56	51	34	17	6	5	483	953		
1927	M	1	11	47	39	115	111	197	187	185	85	19	997		12	101	131	87	66	38	40	18	13	4	7	517			
	F	...	13	37	49	129	128	195	113	71	51	11	797	1794	15	84	95	81	61	47	75	33	20	11	6	528	1045		
1928	M	1	7	31	20	70	106	187	163	176	82	27	870		16	82	114	66	67	43	40	15	14	10	7	474			
	F	...	6	33	32	126	147	195	125	62	44	20	790	1660	13	69	100	70	56	63	50	27	21	8	5	482	956		
1929	M	4	7	32	17	80	99	160	180	165	76	23	843		17	98	99	67	52	37	40	22	16	7	5	460			
	F	...	7	18	23	111	130	186	99	53	28	19	674	1517	3	65	92	51	54	48	63	36	22	15	4	453	913		
1930	M	1	5	14	27	66	106	189	174	159	82	22	845		6	78	105	69	67	28	45	18	12	12	7	447			
	F	...	3	13	29	104	122	186	107	61	37	20	682	1527	12	67	100	80	63	63	71	35	28	13	3	535	982		
1931	M	2	8	15	18	75	118	153	159	161	89	25	823		13	67	78	63	63	34	40	15	20	10	7	410			
	F	...	7	10	27	99	120	149	109	57	38	21	637	1460	8	55	77	62	69	55	55	37	16	12	6	452	862		
1932	M	1	2	14	20	73	105	183	146	142	108	20	814		7	67	70	54	38	41	34	20	22	17	6	376			
	F	...	3	19	33	97	146	160	92	58	41	14	663	1477	7	43	86	70	63	53	63	24	19	15	6	449	825		
1933	M	2	4	10	19	70	84	186	171	155	85	27	813		10	94	76	41	36	34	41	23	10	13	5	383			
	F	...	4	10	26	85	101	201	102	61	29	21	640	1453	1	65	69	70	40	37	60	32	9	6	8	397	780		

\* Corrected figures from 1922 after deducting the following cases found to be non-tuberculous and notifications cancelled:— 1922: 14 pulmonary, 12 non-pulmonary; 1923: 33 pulmonary, 31 non-pulmonary; 1924: 57 pulmonary, 35 non-pulmonary; 1925: 83 pulmonary, 49 non-pulmonary; 1926: 61 pulmonary, 41 non-pulmonary; 1927: 68 pulmonary, 51 non-pulmonary; 1928: 63 pulmonary, 52 non-pulmonary; 1929: 61 pulmonary, 44 non-pulmonary; 1930: 63 pulmonary, 55 non-pulmonary; 1931: 38 pulmonary, 49 non-pulmonary; 1932: 40 pulmonary, 45 non-pulmonary; and 1933: 48 pulmonary, 51 non-pulmonary.



**TABLE 47.**—*Actual number of deaths from pulmonary and non-pulmonary tuberculosis since 1918 not previously notified under the Public Health (Tuberculosis) Regulations.*

Year.	Non-notified fatal cases.		
	Pulmonary tuberculosis.	Non-pulmonary tuberculosis.	Total.
1918 ... ..	303	137	440
1919 ... ..	221	104	325
1920 ... ..	177	122	299
1921 ... ..	135	96	231
1922 ... ..	105	83	188
1923 ... ..	85	74	159
1924 ... ..	64	65	129
1925 ... ..	67	57	124
1926 ... ..	58	32	90
1927 ... ..	54	42	96
1928 ... ..	56	51	107
1929 ... ..	62	61	123
1930 ... ..	46	61	107
1931 ... ..	61	51	112
1932 ... ..	37	28	65
1933 ... ..	45	31	76

The 76 deaths in 1933 of cases not previously notified under the Regulations are further analysed below:—

**TABLE 48.**

	Cause of death.			Total.
	Pulmonary.		Non-pulmonary.	
	Primary.	Secondary.		
Deaths of persons at private addresses	32	2	17	51
Deaths in County mental hospitals of persons belonging to County area ...	3	—	—	3
Deaths in Public Assistance hospitals of persons belonging to County area ...	6	—	5	11
Deaths in other public institutions of persons belonging to County area...	2	—	9	11
Total ... ..	43	2	31	76
	45			

During 1933, 122 pulmonary and 54 non-pulmonary deaths occurred outside the County area of persons usually residing in the Administrative County. Of these, 115 pulmonary and 53 non-pulmonary occurred in public institutions. In 53 instances no case notification could be traced. These are not included in Table 48.

N.B.—The tables mentioned in Appendix II. have been prepared in the County public health department.

## APPENDIX III.

CENSUS OF TUBERCULOUS CASES on the dispensary registers on the 31st December, 1933 (inclusive of 875 patients in sanatoria and hospitals).

Dis- pensary area.	Number of cases under supervision on 31-12-33.								Number of doubtful cases on 31-12-33
	Sex.	Pulmonary tuberculosis.		Non-pulmonary tuberculosis.		Total	Number of cases per 1,000 of population		
		Under 15 years of age.	15 years and over.	Under 15 years of age.	15 years and over.		Pulm.	Non-pul.	
No. 1 ...	M. F.	11 4	216 182	121 107	124 166	931	1.53	1.92	6
No. 2 ...	M. F.	8 11	318 279	87 111	147 194	1,155	1.82	1.59	4
No. 3 ...	M. F.	17 7	465 373	116 105	185 223	1,491	2.35	1.71	—
No. 4 ...	M. F.	14 16	487 374	132 125	202 237	1,587	2.48	1.93	—
No. 5 ...	M. F.	21 30	342 252	108 96	83 115	1,047	2.50	1.56	7
Furness...	M. F.	13 11	81 65	13 21	24 28	256	4.43	2.24	1
Fylde ...	M. F.	5 5	92 87	51 52	33 45	370	2.85	2.72	—
Wigan County	M. F.	23 36	153 136	88 67	91 125	719	3.18	3.39	9
TOTAL ...	M. F.	112 120	2,154 1,748	716 684	889 1,133	7,556	2.29	1.89	27
		4,134		3,422			4.10		

The populations of the dispensary areas are :—Area No. 1, 269,488 ; Area No. 2, 337,073 ; Area No. 3, 365,790 ; Area No. 4, 359,220 ; Area No. 5, 257,212 ; Furness Sub-Area, 38,355 ; Fylde Sub-Area, 66,312 ; Wigan County Sub-Area, 109,280 ; Total for County, 1,802,730.



## APPENDIX III. (contd.).

ANALYSIS OF CASES on the dispensary registers on the 31st December, 1933.

## (a) PULMONARY TUBERCULOSIS.

Age-groups.	Sex.	T.B. minus.		T.B. plus 1.		T.B. plus 2.		T.B. plus 3.		TOTAL.	
		Active.	Quies.	Active.	Quies.	Active.	Quies.	Active.	Quies.	Active.	Quies.
0-5 years ...	M.	1	—	—	—	—	—	—	—	1	—
	F.	1	—	—	—	—	—	—	—	1	—
5-15 years ...	M.	31	75	—	—	3	1	1	—	35	76
	F.	31	73	1	1	10	1	1	1	43	76
15-25 years ...	M.	59	117	24	22	117	36	21	5	221	180
	F.	75	125	41	19	152	36	33	6	301	186
25-35 years ...	M.	52	99	48	41	172	75	31	4	303	219
	F.	69	112	50	41	207	66	22	4	348	223
35-45 years ...	M.	51	91	59	39	158	57	34	6	302	193
	F.	48	80	34	27	101	46	10	2	193	155
45-55 years ...	M.	57	73	31	35	139	37	25	5	252	150
	F.	34	51	15	19	53	30	6	2	108	102
55-65 years ...	M.	34	56	12	17	94	31	15	6	155	110
	F.	13	22	5	15	28	9	10	1	56	47
65 and over ...	M.	10	14	3	4	24	8	5	1	42	27
	F.	6	7	1	—	8	3	4	—	19	10
All Ages ...	M.	295	525	177	158	707	245	132	27	1,311	955
	F.	277	470	147	122	559	191	86	16	1,069	799
GRAND TOTAL ...		1,567		604		1,702		261		4,134	

## (b) NON-PULMONARY TUBERCULOSIS.

Age-groups.	Sex.	Bones and joints (excluding spine).		Spine.		Abdomen.		Other organs.		Peripheral glands.		Skin.		TOTAL.	
		Act.	Quies.	Act.	Quies.	Act.	Quies.	Act.	Quies.	Act.	Quies.	Act.	Quies.	Act.	Quies.
0-5 years ...	M.	19	10	7	—	2	9	1	—	17	29	1	—	47	48
	F.	9	8	6	1	6	3	—	1	19	25	—	—	40	38
5-15 years ...	M.	55	70	29	22	18	48	1	4	98	239	18	19	219	402
	F.	53	55	19	21	9	43	1	5	83	287	14	16	179	427
15-25 years ...	M.	46	65	21	20	10	27	10	9	43	139	30	18	160	278
	F.	23	45	13	13	18	47	2	6	53	180	25	26	134	317
25-35 years ...	M.	33	33	15	13	4	7	16	11	17	40	21	13	106	117
	F.	24	25	17	18	14	18	9	7	31	103	24	21	119	192
35-45 years ...	M.	15	14	11	7	1	1	8	13	6	13	13	7	54	55
	F.	13	15	8	10	5	10	5	9	11	50	22	15	64	109
45-55 years ...	M.	6	15	4	7	3	—	4	4	1	5	8	3	26	34
	F.	15	10	7	2	4	3	3	2	4	13	23	13	56	43
55-65 years ...	M.	7	9	3	1	—	—	2	5	4	2	3	1	19	18
	F.	3	7	4	5	—	2	1	1	4	16	19	8	31	39
65 and over ...	M.	5	6	—	—	—	—	1	2	1	2	2	3	9	13
	F.	8	2	—	1	1	1	1	—	1	5	7	2	18	11
All Ages ...	M.	186	222	90	70	38	92	43	48	187	469	96	64	640	965
	F.	148	167	74	71	57	127	22	31	206	679	134	101	641	1,176
GRAND TOTAL...		723		305		314		144		1,541		395		3,422	

## APPENDIX IV.

HOUSING CONDITIONS of patients in each dispensary area at the end of 1933.

	Pulmonary cases considered infectious.		Pulmonary cases considered not infectious.		Non-pulmonary cases.	
	Under 15 years.	15 years & over.	Under 15 years.	15 years & over.	Under 15 years.	15 years & over.
<b>Patients occupying a separate bedroom :</b>						
Area No. 1 ...	2	164	5	93	48	101
Area No. 2 ...	—	189	2	105	29	87
Area No. 3 ...	—	261	9	175	29	97
Area No. 4 ...	3	294	4	251	35	111
Area No. 5 ...	2	204	13	120	29	45
Furness Sub-Area ...	—	36	7	49	8	22
Fylde Sub-Area ...	—	33	4	61	12	16
Wigan County Sub-Area ...	—	71	8	48	12	37
<b>TOTAL ...</b>	<b>7</b>	<b>1,252</b>	<b>52</b>	<b>902</b>	<b>202</b>	<b>516</b>
<b>Patients occupying a separate bed but not a separate bedroom :</b>						
Area No. 1 ...	—	35	4	16	92	32
Area No. 2 ...	1	152	8	67	103	101
Area No. 3 ...	1	150	6	95	101	97
Area No. 4 ...	2	64	14	100	90	85
Area No. 5 ...	1	68	17	51	68	39
Furness Sub-Area ...	—	5	14	23	22	12
Fylde Sub-Area ...	—	17	5	22	44	22
Wigan County Sub-Area ...	3	37	24	56	50	56
<b>TOTAL ...</b>	<b>8</b>	<b>528</b>	<b>92</b>	<b>430</b>	<b>570</b>	<b>444</b>
<b>Patients not occupying a separate bed :</b>						
Area No. 1 ...	*	†				
Area No. 1 ...	—	20	4	70	88	157
Area No. 2 ...	1	19	7	65	66	153
Area No. 3 ...	—	27	8	130	91	214
Area No. 4 ...	2	4	5	148	132	243
Area No. 5 ...	—	32	18	119	107	114
Furness Sub-Area ...	—	5	3	28	4	18
Fylde Sub-Area ...	—	5	1	41	47	40
Wigan County Sub-Area ...	—	1	24	76	93	123
<b>TOTAL ...</b>	<b>3</b>	<b>113</b>	<b>70</b>	<b>677</b>	<b>628</b>	<b>1,062</b>
<b>GRAND TOTAL ...</b>	<b>18</b>	<b>1,893</b>	<b>214</b>	<b>2,009</b>	<b>1,400</b>	<b>2,022</b>

\* Two of these children were in sanatoria or pulmonary hospitals at the end of 1933.

† Of the adult infective patients without a separate bed, there were in sanatoria or hospitals at the end of 1933 the following patients :—Area No. 1, 7; Area No. 2, 5; Area No. 3, 7; Area No. 4, 1; Area No. 5, 4; Furness Sub-Area, 1; Fylde Sub-Area, 1; and Wigan County Sub-Area, 1; Total 27.



## APPENDIX V.

## Return showing the WORK OF THE DISPENSARIES during the year 1933.

(Tables A and B of Memorandum 37/ T (Revised) of the Ministry of Health).

DIAGNOSIS.	PULMONARY.				NON-PULMONARY.				TOTAL.				GRAND TOTAL.	
	Adults.		Children.		Adults.		Children.		Adults.		Children.			
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
A.—NEW CASES examined during the year (excluding contacts):														
(a) Definitely tuberculous ...	661	470	24	26	147	168	162	151	808	638	186	177	1,809	
* (b) Diagnosis not completed	—	—	—	—	—	—	—	—	10	3	5	4	22	
(c) Non-tuberculous... ..	—	—	—	—	—	—	—	—	1,035	943	401	338	2,717	
B.—CONTACTS examined during the year:														
(a) Definitely tuberculous ...	16	18	3	3	2	4	7	1	18	22	10	4	54	
* (b) Diagnosis not completed	—	—	—	—	—	—	—	—	1	2	—	2	5	
(c) Non-tuberculous... ..	—	—	—	—	—	—	—	—	199	285	249	223	956	
C.—CASES written off the dispensary register as:														
(a) Recovered... ..	221	158	19	17	147	155	110	98	368	313	129	115	925	
(b) Non-tuberculous (including any such cases previously diagnosed and entered on the dispensary register as tuberculous) ... ..	—	—	—	—	—	—	—	—	1,246	1,238	658	565	3,707	
D.—NUMBER OF CASES on dispensary register on 31st December, 1933:														
(a) Definitely tuberculous ...	2,154	1,748	112	120	889	1,133	716	684	3,043	2,881	828	804	7,556	
(b) Diagnosis not completed	—	—	—	—	—	—	—	—	11	5	5	6	27	

1. Number of cases on dispensary register on 1st January, 1933 ... ..	7,911	8. Number of visits by tuberculosis officers to homes (including personal consultations) ... ..	5,722
2. Number of cases transferred from other areas and cases returned after discharge under Head 3 in previous years ... ..	185	9. Number of visits by nurses or health visitors to homes for dispensary purposes	40,530
3. Number of cases transferred to other areas, cases not desiring further assistance under the scheme, and cases "lost sight of" ... ..	492†	10. Number of (a) Specimens of sputum, etc., examined (b) X-ray examinations made in connection with dispensary work. ... ..	6,132 9,095
4. Cases written off during the year as dead (all causes) ... ..	952	11. Number of "recovered" cases restored to dispensary register, and included in A(a) and A(b) above ... ..	51
5. Number of attendances at the dispensary (including contacts) ... ..	23,481	12. Number of "T.B. plus" cases on dispensary register on 31st December ...	2,567
6. Number of insured persons under domiciliary treatment on the 31st December	1,319.	13. Number of dispensaries for the treatment of tuberculosis (excluding centres used only for special forms of treatment):—	
7. Number of consultations with medical practitioners:—		Provided by the Council ... ..	24
(a) Personal ... ..	667	Provided by voluntary bodies ... ..	—
(b) Other ... ..	5,668		

\* *i.e.*, remaining undiagnosed on 31st December.

† Includes transfers to other authorities subsequent on boundary charges.

## APPENDIX VI.

Return showing the extent of RESIDENTIAL TREATMENT AND OBSERVATION during the year 1933 in institutions (other than Poor Law institutions) approved for the treatment of tuberculosis.

(Table D of Memorandum 37/T (Revised) of the Ministry of Health).

			In institutions on Jan. 1.	Admitted during the year.	Discharged during the year.	Died in the institutions.	In institutions on Dec. 31.
Number of doubtfully tuberculous cases admitted for observation.   ...   ...   ...	Adults	M.	8	45	44	—	9
		F.	4	35	33	—	6
	Children.		9	49	47	2	9
	Total...		21	129	124	2	24
Number of definitely tuberculous patients admitted for treatment ...   ...   ...	Adults	M.	399	807	676	131	399
		F.	299	680	613	97	269
	Children.		212	234	254	9	183
	Total...		910	1721	1543	237	851
GRAND TOTAL                   ...   ...			931	1,850	1,667	239	875

## APPENDIX VII.

Return showing the extent of RESIDENTIAL TREATMENT provided during the year 1933 IN POOR LAW INSTITUTIONS for persons chargeable to the Council.

(Table E of Memorandum 37/T (Revised) of the Ministry of Health).

			In institutions on Jan. 1.	Admitted during the year.	Discharged during the year.	Died in the institutions.	In institutions on Dec. 31.
Number of patients suffering from pulmonary tuberculosis admitted for treatment. ... ..	Adults	M.	19	134	82	54	17
		F.	9	51	33	19	8
	Children.		2	8	7	2	1
	Total...		30	193	122	75	26
Number of patients suffering from non-pulmonary tuberculosis admitted for treatment	Adults	M.	7	27	20	7	7
		F.	15	27	27	8	7
	Children.		11	38	28	11	10
	Total...		33	92	75	26	24
GRAND TOTAL			63	285	197	101	50



## APPENDIX VIII.

Return showing the results of OBSERVATION OF DOUBTFULLY TUBERCULOUS CASES discharged during the year 1933 from institutions approved for the treatment of tuberculosis.

(Table F of Memorandum 37/T (Revised) of the Ministry of Health).

Diagnosis on discharge from observation.	For pulmonary tuberculosis.						For non-pulmonary tuberculosis.						TOTALS.		
	Stay under 4 weeks.			Stay over 4 weeks.			Stay under 4 weeks			Stay over 4 weeks					
	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.
Tuberculous ... ..	6	1	—	11	7	2	2	1	4	3	7	20	22	16	26
Non-tuberculous ... ..	2	—	—	10	8	6	4	4	3	2	3	10	18	15	19
Doubtful ... ..	—	1	—	1	1	—	1	—	2	2	—	—	4	2	2
Died ... ..	—	—	—	—	—	—	—	—	2*	—	—	—	—	—	2
Totals ...	8	2	—	22	16	8	7	5	11	7	10	30	44	33	49

\* Diagnosis : (1) Broncho-pneumonia ; (2) Streptococcal empyema.

## APPENDIX IX.

Return showing the IMMEDIATE RESULTS OF TREATMENT of definitely tuberculous patients discharged during the year 1933 from institutions approved for the treatment of tuberculosis.

(This table is based on Table G of Memorandum 37/T (Revised) of the Ministry of Health).

Classification on admission to the institution.	Condition at time of discharge.	Duration of residential treatment in the institution.													GRAND TOTALS.
		Under 3 months.			3—6 months			6—12 months			More than 12 months				
		M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.		
PULMONARY TUBERCULOSIS.	Class T.B. minus.	Quiescent ... ..	11	6	1	21	11	7	7	19	9	4	4	13	113
		Improved ... ..	23	15	6	27	17	5	8	9	2	1	1	—	114
		No material improvement...	12	6	—	4	—	—	—	1	1	—	1	1	26
		Died in institution ... ..	5	6	—	2	1	1	1	2	—	—	—	—	18
	Class T.B. plus. Group 1.	Quiescent ... ..	1	—	—	7	5	—	12	9	—	2	2	—	38
		Improved ... ..	2	5	—	6	7	—	9	14	—	2	2	—	47
		No material improvement...	2	2	—	5	—	—	4	3	—	2	3	—	21
		Died in institution ... ..	3	6	—	—	—	—	2	1	—	—	1	—	13
	Class T.B. plus. Group 2.	Quiescent ... ..	1	2	—	12	8	—	12	13	1	7	4	1	61
		Improved ... ..	27	32	1	59	73	—	69	46	—	31	23	3	364
		No material improvement...	37	26	2	27	20	—	15	14	—	10	9	1	161
		Died in institution ... ..	33	25	—	23	13	—	8	5	—	11	1	1	120
	Class T.B. plus. Group 3.	Quiescent ... ..	1	—	—	1	1	—	4	1	—	2	1	—	11
		Improved ... ..	3	7	—	13	13	—	10	7	—	4	1	1	59
		No material improvement...	11	11	—	10	6	—	5	6	—	—	3	—	52
		Died in institution ... ..	24	14	—	8	9	1	4	4	—	1	1	—	66
	TOTALS	(pulmonary) ... ..	196	163	10	225	184	14	170	154	13	77	57	21	1284
NON-PULMONARY TUBERCULOSIS.	Bones & joints.	Quiescent ... ..	8	12	12	7	5	10	8	5	16	6	4	26	119
		Improved ... ..	26	22	3	5	5	4	6	7	2	7	4	28	119
		No material improvement...	4	6	7	2	1	—	1	—	—	—	—	2	23
		Died in institution ... ..	2	1	1	2	—	—	1	3	—	—	—	1	11
	Abdominal.	Quiescent ... ..	3	4	6	1	1	7	—	—	5	—	—	2	29
		Improved ... ..	4	10	6	2	1	2	—	3	—	—	1	1	30
		No material improvement...	2	—	7	—	1	1	—	—	1	—	—	—	12
		Died in institution ... ..	1	1	1	—	—	—	—	—	—	—	—	—	3
	Other organs.	Quiescent ... ..	3	2	—	—	—	3	—	—	—	—	—	1	9
		Improved ... ..	15	13	—	4	1	—	1	—	1	—	—	2	37
		No material improvement...	2	3	—	—	—	—	—	—	—	—	—	—	5
		Died in institution ... ..	—	2	3	—	—	—	—	—	—	—	—	—	5
	Peripheral glands.	Quiescent ... ..	3	6	6	1	1	8	—	1	11	—	—	1	38
		Improved ... ..	11	19	14	—	1	1	—	1	1	—	1	2	51
		No material improvement...	1	3	—	—	—	—	—	—	—	—	—	—	4
		Died in institution ... ..	—	1	—	—	—	—	—	—	—	—	—	—	1
	TOTALS	(non-pulmonary) ... ..	85	105	66	24	17	36	17	20	27	13	10	66	496



## APPENDIX X.

## INSTITUTIONAL ACCOMMODATION.

Number of beds occupied by County patients undergoing residential treatment for pulmonary and non-pulmonary tuberculosis on the 31st December, 1933.

Institution.	Pulmonary tuberculosis.		Non-pulmonary tuberculosis.		Total.
	Adults.	Children.	Adults.	Children.	
(a) Sanatoria.					
Aitken, near Bury ... ..	41	—	—	—	41
Cambridgeshire Tuberculosis Colony, Papworth ... ..	1	—	—	—	1
Eastby, near Skipton ... ..	—	15	—	2	17
East Lancashire, Cheshire ... ..	42	—	—	—	42
Elswick, near Kirkham ... ..	65	—	—	—	65
Halifax, Shelf ... ..	10	1	—	—	11
High Carley, near Ulverston ... ..	107	3	—	—	110
King Edward VII, Midhurst ... ..	3	—	—	—	3
Meathop, Grange-over-Sands ... ..	11	—	—	—	11
Oubas House, Ulverston ... ..	—	11	—	—	11
Wilkinson, Bolton ... ..	3	—	—	—	3
Total ... ..	283	30	—	2	315
(b) Pulmonary hospitals.					
Chadderton, near Oldham ... ..	39	—	—	—	39
Eccleston Hall, St. Helens ... ..	6	—	—	—	6
Heath Charnock, Chorley ... ..	34	—	—	—	34
Hefferston Grange, Cheshire ... ..	6	—	—	—	6
Peel Hall, Little Hulton ... ..	55	—	—	—	55
Pemberton, Wigan ... ..	3	—	—	—	3
Rufford, near Ormskirk ... ..	47	1	—	—	48
Withnell, near Chorley ... ..	45	—	—	—	45
Wolstenholme, Norden ... ..	27	—	—	—	27
Total ... ..	262	1	—	—	263
(c) Training colonies.					
Burrow Hill Sanatorium Colony, Frimley ... ..	1	—	—	—	1
Cambridgeshire Tuberculosis Colony, Papworth ... ..	2	—	1	—	3
Derwen Cripples' College, Oswestry ... ..	—	—	5	—	5
British Legion Village, Preston Hall, Kent ... ..	1	—	—	—	1
Total ... ..	4	—	6	—	10
(d) Observation cases.					
Bootle Borough Hospital ... ..	—	—	1	—	1
Elswick Sanatorium ... ..	2	—	—	—	2
High Carley Sanatorium ... ..	3	—	—	—	3
Oubas House Sanatorium ... ..	—	5	—	—	5
Royal Manchester Children's Hospital ... ..	—	—	—	1	1
Withnell Pulmonary Hospital ... ..	1	—	—	—	1
Wrightington Hospital ... ..	—	—	8	3	11
Total ... ..	6	5	9	4	24

## APPENDIX X. (contd.).

Institution.	Pulmonary tuberculosis.		Non-pulmonary tuberculosis.		Total.
	Adults.	Children.	Adults.	Children.	
<i>(e) General hospitals.</i>					
David Lewis Northern Hospital, Liverpool	—	—	—	1	1
King's College Hospital, London ... ..	—	—	1	—	1
North Lonsdale Hospital, Barrow-in-Furness ... ..	—	—	—	1	1
Preston Royal Infirmary ... ..	—	—	1	—	1
Royal Southern Hospital, Liverpool ...	—	—	1	—	1
Warrington Infirmary ... ..	—	—	—	1	1
Total ... ..	—	—	3	3	6
<i>(f) Hospitals for non-pulmonary tuberculosis.</i>					
Alton, Hants. (Lord Mayor Treloar Cripples' Hospital) ... ..	—	—	—	—	3
Coleshill (Warwickshire Orthopædic Hospital for Children) ... ..	—	—	—	6	6
Leasowe, Cheshire (Liverpool Open-air Hospital for Children) ... ..	—	1	6	22	29
Oswestry (Robert Jones and Agnes Hunt Orthopædic Hospital) ... ..	—	—	4	—	4
Pendlebury (Royal Manchester Children's Hospital) ... ..	—	—	—	1	1
Royal Liverpool Children's Hospital—Heswall, Cheshire ... ..	—	—	—	8	8
Myrtle Street, Liverpool ... ..	—	—	—	1	1
United Services Fund—Heatherwood, Berks. ... ..	—	—	—	2	2
Melton Lodge, Great Yarmouth ... ..	—	—	—	3	3
Windermere (Ethel Hedley Hospital for Crippled Children) ... ..	—	—	—	1	1
Wrightington, near Wigan ... ..	18	2	81	97	198
Total ... ..	18	3	91	144	256
<i>(g) Skin hospital.</i>					
Manchester and Salford ... ..	—	—	1	—	1
GRAND TOTAL ... ..	573	39	110	153	875
	612		263		

N.B.—The number of beds occupied fluctuates during the course of the year, there being a greater demand for beds in the summer than in the winter. In July, 1933, the beds occupied totalled 944, and in July, 1934, 926.





